Chrysler
Chassis Application

1998-2004

Vetronix Corporation
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Some Things You Should Know

WARNING!

Exhaust Gas

When performing any checks with the engine running in an enclosed space such as a garage, be sure there is proper ventilation. Never inhale exhaust gases; they contain carbon monoxide, a colorless, odorless, extremely dangerous gas which can cause unconsciousness or death.

WARNING!

Avoiding Injury

Always set the parking brake securely and block the drive wheels before performing any checks or repairs on the vehicle.

Important—Please Read

The Tech 1, Tech 1A, and MTS 3100 are designed for use by trained service personnel only. They have been developed for the sole purpose of diagnosing and repairing automotive electronic systems. With the help of the tester, the information presented in this manual and the appropriate automotive service manual, qualified personnel should be able to diagnose and repair electronic control systems.

Disclaimer

Every attempt has been made to provide complete and accurate technical information based on factory service information available at the time of publication. However, the right is reserved to make changes at any time without notice.

FCC Compliance

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Using This Application with the MTS 3100

The MTS 3100 diagnoses OBD systems in a similar manner as the Tech 1/Tech 1A but with the addition of data display enhancements. All tester adapters required to perform OBD system diagnostics are described in this operator's manual. Be sure to read the vehicle coverage tables for proper adapter configuration before connecting to the vehicle's diagnostic data link connector.

When used alone in the MTS 3100, the operation of the cartridge and the vehicle identification screens, test menus, and data screens are as described in this manual.

When this application is used with the MTS 3100 in conjunction with a program card, vehicle identification screens, test menus, diagnostic trouble codes, and diagnostic data parameters can be viewed in full-screen Enhanced Mode displays. Refer to the Enhanced Mode operating instructions in the program card operator's manual for further detail.

A Note about Tech 1 and Tech 1A Testers

The Tech 1 was originally introduced as an OEM scan tool in 1984. The Tech 1 Series A (Tech 1A) was released in 1989 and is an updated version of the Tech 1. After 19 years of successful distribution Vetronix decided to retire the Tech 1 and Tech 1 A in 2003. This further established the MTS 3100's foothold in the automotive service industry.

Please note that while every attempt has been made to ensure the cartridge based software applications work on the Tech 1 and Tech 1A testers, Vetronix strongly recommends that Tech 1 and Tech 1A owners update to the MTS 3100 tester.

Tech 1 and Tech 1A owners now qualify for special discounts on any MTS 3100 tester purchase. Please contact our customer support department for program details: 800-321-4889 Ext 4.

Important—Please Read

When you are using this manual to diagnose a vehicle, take the time to determine the type of tester that you are working with and be sure you are using the correct cables and adapters. Doing so may prevent misuse of application cartridges and incorrect vehicle diagnosis. Refer to Chapter 4 for complete information on the correct cables and adapters to use depending on which tester you have and the vehicle you are diagnosing.

Using This Manual

Reading through this manual before putting your MTS 3100 to work introduces you to all of its capabilities and tell you how to use them immediately. The application software is designed to reduce time-consuming reference to manuals as much as possible. Once you are familiar with the software and its operation, you'll be able to spend more time diagnosing and less time reading. Later, if questions arise, a quick glance at the flow chart for the test you are performing is probably all you need.

The flow charts in this manual consist of screen displays enclosed in boxes. The displays are arranged in the order in which they appear while using the software. Keys on the tester keypad are shown in the manual as white letters in small black boxes. At the end of each test mode description, there is a list of the active tester keys and their functions in that particular test.

Note that if you are using the MTS 3100, the display looks different for vehicle selection and data list software. Otherwise, the diagnostic routines are the same Tech 1/1A displays as those shown in this manual. Refer to the MTS 3100 Operator's Manual for examples of MTS 3100 displays.

Most display screens require input from you, such as YES, NO, or EXIT. To respond when the tester asks for information, just press the appropriate key on the tester keypad. Although there are exceptions, pressing EXIT generally takes you back to the previous screen or to the beginning of a process.

Please read Chapter 2 before beginning diagnostics for the first time.

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1. CHRYSLER CHASSIS APPLICATION DESCRIPTION

The Chrysler Chassis Application is used to diagnose and troubleshoot the ABS systems used on 1998 through 2004 Chrysler passenger cars, minivans, and trucks. This application supports testing of rear wheel anti-lock brakes (RWAL) and four wheel anti-lock brakes (4WAL). A complete list of Chrysler vehicles that can be tested with this cartridge is provided in the following pages.

When properly connected to the vehicle, the tester automatically identifies the ABS system under test. You are then allowed to perform diagnostics. Diagnostics consists of allowing you to monitor diagnostic data parameters, read diagnostic trouble codes, and perform output controls.

Detailed operating instructions are given in the following sections of the manual.

While the tester is a very powerful tool, it cannot substitute for your knowledge and skill. To get the most out of this tool, you need full understanding of the Chrysler anti-lock brake systems. It is important that you use the tester in conjunction with the Chrysler service manual for the vehicle you are diagnosing.

OPERATING MODES

The test modes available vary according to the specific configuration of the vehicle being tested and the system you wish to test. Before testing can begin, the tester asks you to enter certain information such as the model year, the type of vehicle being tested, the system you wish to test, and other specific information. How to enter the information is explained in Chapter 4.

Once the information is entered, a Select Mode menu is displayed showing the test modes available for the selected vehicle. Only test modes available for the selected vehicle are displayed in the menus. Not all test modes described in this manual are available for every vehicle.

DATA LIST

The tester displays chassis data parameters in either preselected or user-defined pairs. The displayed data is specific to the vehicle being tested. *Create your own Data Pairs on page 34* explains how to select a pair of data parameters for monitoring. Input/Output states and sensor values are included in the Data List mode.

DTCs

The purpose of the DTCs test mode is to read the ABS fault codes that are stored in the ABS CAB memory. Each DTC that is present displays a DTC description as well as a DTC number, when applicable. If no Diagnostic Trouble Codes are present, the tester displays a NO DTCs message. Functionality within this test mode also includes viewing Freeze Frame Data, when applicable, and also the ability to clear diagnostic information.

SNAPSHOT

Records data before and/or after the occurrence of an intermittent fault condition. Trigger conditions are user selectable and include the ability to trigger on DTCs or by manual key press.

OBD CONTROLS

On-Board Diagnostic (OBD) controls mode provides fast access to output controls supported by the vehicle OBD system. Certain vehicle systems allow the tester to command an output or actuator device to turn on and off. The tester that is used with this software is capable of bi-directional communication which controls the device under test, or it can cause the device under test to change state by controlling ABS CAB input/output electronics. Providing quick and efficient diagnostic software tools is the purpose of this mode.

SYSTEM TESTS

System Tests are diagnostic routines which incorporate tester to vehicle bi-directional command messages for system or device control. The tester performs these tests interactively, with communication from itself to the vehicle ABS CAB. All System Tests return status information after a feature or function has been performed. When these tests are completed, a result is displayed indicating status of the system, procedure, or device under test.

INFORMATION

When performing diagnostic routines on the vehicle under test it may be necessary to be access information about the ABS system. Selecting Information mode allows you to view helpful information that is particular to the vehicle under test. This information may consist of software version, ABS configuration, or ABS system identification.

2. OPERATING PRECAUTIONS

INTRODUCTION

This chapter explains precautions that are very important when using Vetronix testers and application software with a vehicle. Failure to observe these precautions could affect the operation of the tester, the accuracy of data and tests, and at times your safety.

Read all of this chapter before you operate the tester and application software (cartridges). Safeguards have been built into the tester to protect you, the vehicle, and the tester from any hazards. Misuse or improper securing of the vehicle could lead to unsafe conditions.

PRECAUTIONS FOR ALL APPLICATIONS

PROTECT AGAINST REVERSE POLARITY

CAUTION!	If power is applied to the tester and the Tech 1A or Tech 1 display remains blank or the green LED on the MTS 3100 does not illuminate when turned off, reverse polarity in the cigarette lighter may be present. Damage to the tester could occur. **DO NOT** connect the ALDL/DLC cable to the vehicle. Verify that the center contact of the vehicle's cigarette lighter has +12 volts and that the outer contact is grounded.

PROTECT AGAINST VOLTAGE SPIKES

CAUTION!

Due to the possibility of voltage spikes that could damage the vehicle or tester, do not connect or disconnect the tester while the ignition key is ON or while the engine is running.

INSTALL/REMOVE CARTRIDGES WITH TESTER OFF

CAUTION!

Do not install or remove application or auxiliary cartridges while power is applied to the tester.

To change or add a cartridge, do the following:

1. Turn the ignition OFF.
2. Disconnect the tester power source—either the cigarette lighter power plug or the ALDL/DLC Cable—from the vehicle.
3. For the MTS 3100, press # EXIT to turn the tester OFF.
4. Change or install the cartridge(s).
5. Reconnect the tester power source—either the cigarette lighter power plug or the ALDL/DLC Cable.
6. Turn the ignition ON.

APPLY PARKING BRAKE

WARNING!

OBD CONTROLS MODE OPERATION

Use care when performing these tests. If used incorrectly, these test can result in personal injury or damage to the ECM, PCM, TCM, BCM, CAB, CTM, FCM, or vehicle. **ALWAYS PUT THE PARKING BRAKE ON AND BLOCK THE WHEELS WHEN USING THIS TEST MODE.**

PROTECT SNAPSHOT DATA

CAUTION!

Snapshot data is retained in tester memory for up to 24 hours, even if the tester is disconnected from the vehicle.

If you remove or change master cartridges, or power up the tester without a master cartridge or with a different master cartridge, you lose the snapshot data.

CHECK TESTER INDUCED DTCs

CAUTION!

Under some conditions the tester can cause trouble codes to be set. Generally these codes are associated with the serial data link. It is important to determine if the trouble codes are set by the tester or are due to a true malfunction in the vehicle.

Check for trouble codes at the start and at the end of testing. If there are codes set at the end of testing—but not at the start—you may assume that they are caused by the tester and should be cleared and ignored.

3. VEHICLE COVERAGE

Use this section to assist you in operating your Vetronix tester and application software. It covers everything needed to get your tester connected to the vehicle and begin performing the diagnostic functions. It is suggested that you read this manual completely before operating the tester and the application software.

VEHICLE COVERAGE

1998 VEHICLE COVERAGE

1998 DODGE/CHRYSLER/PLYMOUTH PASSENGER CARS/ MINIVANS				
MODEL	**BODY CODE**	**SYSTEM**	**DATA LINK**	**ADAPTER CONFIG.**
Sebring (convertible)	JX	Teves MK-20 ABS	CCD	CHRY-16
		Teves MK-20 ABS + TCS		
Stratus, Breeze	JA	Teves MK-20	CCD	CHRY-16
Town & Country, Voyager, Caravan	NS	Teves MK-20 ABS	CCD	CHRY-16
		Teves MK-20 ABS + TCS		
Intrepid, Concorde	LH	Teves MK-20 ABS	PCI BUS	CHRY-16/ OBD II-C2
		Teves MK-20 ABS + TCS		

1998 DODGE TRUCKS

MODEL	BODY CODE	SYSTEM	DATA LINK	ADAPTER CONFIG.
Ram Van, Wagon	AB	Kelsey-Hayes EBC 2	CCD	CHRY-16
		Kelsey-Hayes EBC 325		
Dakota	AN	Kelsey-Hayes EBC 2	CCD	CHRY-16
		Kelsey-Hayes EBC 325		
Ram Truck	BR	Kelsey-Hayes EBC 2	CCD	CHRY-16
		Kelsey-Hayes EBC 325		
Durango	DN	Kelsey-Hayes EBC 2	CCD	CHRY-16
		Kelsey-Hayes EBC 325		

1999 VEHICLE COVERAGE

1999 DODGE/CHRYSLER/PLYMOUTH PASSENGER CARS/ MINIVANS

MODEL	BODY CODE	SYSTEM	DATA LINK	ADAPTER CONFIG.
Sebring (convertible)	JX	Teves MK-20 ABS	CCD	CHRY-16
		Teves MK-20 ABS + TCS		
Stratus, Breeze	JA	Teves MK-20	CCD	CHRY-16
Town & Country, Voyager, Caravan	NS	Teves MK-20 ABS	CCD	CHRY-16
		Teves MK-20 ABS + TCS		
Intrepid, Concorde	LH	Teves MK-20 ABS	PCI BUS	CHRY-16/ OBD II-C2
		Teves MK-20 ABS + TCS		

1999 DODGE/JEEP TRUCKS

MODEL	BODY CODE	SYSTEM	DATA LINK	ADAPTER CONFIG.
Ram Van, Wagon	AB	Kelsey-Hayes EBC 2	CCD	CHRY-16
		Kelsey-Hayes EBC 325		
Dakota	AN	Kelsey-Hayes EBC 2	CCD	CHRY-16
		Kelsey-Hayes EBC 325		
Ram Truck	BR	Kelsey-Hayes EBC 2	CCD	CHRY-16
		Kelsey-Hayes EBC 325		
Durango	DN	Kelsey-Hayes EBC 2	CCD	CHRY-16
		Kelsey-Hayes EBC 325		
Grand Cherokee	WJ	Teves MK-20	PCI BUS	CHRY-16/ OBD II-C2

2000 VEHICLE COVERAGE

2000 DODGE/CHRYSLER/PLYMOUTH PASSENGER CARS/ MINIVANS

MODEL	BODY CODE	SYSTEM	DATA LINK	ADAPTER CONFIG.
Sebring (convertible)	JX	Teves MK-20 ABS	CCD	CHRY-16
		Teves MK-20 ABS + TCS		
Stratus, Breeze	JA	Teves MK-20	CCD	CHRY-16
Town & Country, Voyager, Caravan	NS	Teves MK-20 ABS	CCD	CHRY-16
		Teves MK-20 ABS + TCS		
Intrepid, Concorde	LH	Teves MK-20 ABS	PCI BUS	CHRY-16/ OBD II-C2
		Teves MK-20 ABS + TCS		

2000 DODGE/JEEP TRUCKS

MODEL	BODY CODE	SYSTEM	DATA LINK	ADAPTER CONFIG.
Ram Van, Wagon	AB	Kelsey-Hayes EBC 2	CCD	CHRY-16
		Kelsey-Hayes EBC 325		
Dakota	AN	Kelsey-Hayes EBC 2	CCD	CHRY-16
		Kelsey-Hayes EBC 325		
Ram Truck	BR	Kelsey-Hayes EBC 2	CCD	CHRY-16
		Kelsey-Hayes EBC 325		
Durango	DN	Kelsey-Hayes EBC 2	CCD	CHRY-16
		Kelsey-Hayes EBC 325		
Grand Cherokee	WJ	Teves MK-20	PCI BUS	CHRY-16/ OBD II-C2

2001 VEHICLE COVERAGE

2001 DODGE/CHRYSLER/PLYMOUTH PASSENGER CARS/ MINIVANS

MODEL	BODY CODE	SYSTEM	DATA LINK	ADAPTER CONFIG.
Sebring, Stratus	JR	Teves MK-20	PCI BUS	CHRY-16/ OBD II-C2
PT Cruiser	PT	Teves MK-20 ABS + TCS	PCI BUS	CHRY-16/ OBD II-C2
Town & Country, Voyager, Caravan	RS	Teves MK-20 ABS	PCI BUS	CHRY-16/ OBD II-C2
		Teves MK-20 ABS + TCS		
Intrepid, Concorde	LH	Teves MK-20 ABS	PCI BUS	CHRY-16/ OBD II-C2
		Teves MK-20 ABS + TCS		

2001 DODGE/JEEP TRUCKS

MODEL	BODY CODE	SYSTEM	DATA LINK	ADAPTER CONFIG.
Ram Van, Wagon	AB	Kelsey-Hayes EBC 2	CCD	CHRY-16
		Kelsey-Hayes EBC 325		
Dakota	AN	Kelsey-Hayes EBC 2	PCI BUS	CHRY-16/ OBD II-C2
		Kelsey-Hayes EBC 325		
Ram Truck	BR	Kelsey-Hayes EBC 2	CCD	CHRY-16
		Kelsey-Hayes EBC 325		
Durango	DN	Kelsey-Hayes EBC 2	PCI BUS	CHRY-16/ OBD II-C2
		Kelsey-Hayes EBC 325		
Grand Cherokee	WJ	Teves MK-20	PCI BUS	CHRY-16/ OBD II-C2

2002 VEHICLE COVERAGE

2002 CHRYSLER/DODGE PASSENGER CARS/MINIVANS

MODEL	BODY VIN (5TH)	SYSTEM	DATA LINK	ADAPTER CONFIG.
Sebring, Stratus	J, L	Teves MK-20 ABS	PCI BUS	CHRY-16/ OBD II-C2
		Teves MK-20 ABS + TCS		
PT Cruiser	Y	Teves MK-20 ABS + TCS	PCI BUS	CHRY-16/ OBD II-C2
Neon	S, V	Teves MK-20	PCI BUS	CHRY-16/ OBD II-C2
Intrepid, Concorde, 300M	D, E, H	Teves MK-20 ABS	PCI BUS	CHRY-16/ OBD II-C2
		Teves MK-20 ABS + TCS		
Viper	R	Teves MK-20	PCI BUS	CHRY-16/ OBD II-C2
Caravan, Voyager, Town & Country	P, T, J, Y, C, H, K	Teves MK-20 ABS	PCI BUS	CHRY-16/ OBD II-C2
		Teves MK-20 ABS + TCS	PCI BUS	CHRY-16/ OBD II-C2

2002 DODGE LIGHT TRUCKS/VANS

MODEL	BODY VIN (5TH)	SYSTEM	DATA LINK	ADAPTER CONFIG.
Ram Van/Wagon	B	Kelsey-Hayes EBC 2	CCD	CHRY-16
		Kelsey-Hayes EBC 325		
Ram Truck 1500	A, U	Kelsey-Hayes EBC 125	PCI BUS	CHRY-16/ OBD II-C2
		Kelsey-Hayes EBC 325		
Ram Truck 2500-3500	C, F	Kelsey-Hayes EBC 2	CCD	CHRY-16
		Kelsey-Hayes EBC 325		
Dakota	G, L	Kelsey-Hayes EBC 125	PCI BUS	CHRY-16/ OBD II-C2
		Kelsey-Hayes EBC 325		
Durango	R, S	Kelsey-Hayes EBC 125	PCI BUS	CHRY-16/ OBD II-C2
		Kelsey-Hayes EBC 325		

2002 JEEP TRUCKS

MODEL	BODY VIN (5TH)	SYSTEM	DATA LINK	ADAPTER CONFIG.
Grand Cherokee	X, W	Teves MK-20 ABS	PCI BUS	CHRY-16/ OBD II-C2

2002 JEEP TRUCKS (CONT'D)

MODEL	BODY VIN (5TH)	SYSTEM	DATA LINK	ADAPTER CONFIG.
Liberty	K, L, M	Teves MK-20 ABS	PCI BUS	CHRY-16/ OBD II-C2

2003 VEHICLE COVERAGE

2003 CHRYSLER/DODGE PASSENGER CARS/MINIVANS

MODEL	BODY VIN (5TH)	SYSTEM	DATA LINK	ADAPTER CONFIG.
Sebring, Stratus	J, L	Teves MK-20 ABS	PCI BUS	CHRY-16/ OBD II-C2
PT Cruiser	Y	Teves MK-20 ABS	PCI BUS	CHRY-16/ OBD II-C2
		Teves MK-20 ABS + TCS		
Neon	S, V	Teves MK-20 ABS	PCI BUS	CHRY-16/ OBD II-C2
Intrepid, Concorde, 300M	D, E, H	Teves MK-20 ABS	PCI BUS	CHRY-16/ OBD II-C2
		Teves MK-20 ABS + TCS		
Viper	R	Teves MK-20 ABS	PCI BUS	CHRY-16/ OBD II-C2
Caravan, Voyager, Town & Country	P, T, J, Y, C, H, K	Teves MK-20 ABS	PCI BUS	CHRY-16/ OBD II-C2
		Teves MK-20 ABS + TCS		

2003 DODGE LIGHT TRUCKS/VANS

MODEL	BODY VIN (5TH)	SYSTEM	DATA LINK	ADAPTER CONFIG.
Ram Van/Wagon	B	Kelsey-Hayes EBC 2	CCD	CHRY-16
		Kelsey-Hayes EBC 325		
Ram Truck 1500/2500/3500	A, U	Kelsey-Hayes EBC 125	PCI BUS	CHRY-16/ OBD II-C2
		Kelsey-Hayes EBC 325		
Dakota	G, L	Kelsey-Hayes EBC 125	PCI BUS	CHRY-16/ OBD II-C2
		Kelsey-Hayes EBC 325		
Durango	R, S	Kelsey-Hayes EBC 125	PCI BUS	CHRY-16/ OBD II-C2
		Kelsey-Hayes EBC 325		

2003 JEEP TRUCKS

MODEL	BODY VIN (5TH)	SYSTEM	DATA LINK	ADAPTER CONFIG.
Grand Cherokee	X, W	Teves MK-20	PCI BUS	CHRY-16/ OBD II-C2
Liberty	K, L, M	Teves MK-20	PCI BUS	CHRY-16/ OBD II-C2

2004 VEHICLE COVERAGE

2004 CHRYSLER/DODGE PASSENGER CARS/MINIVANS

MODEL	BODY VIN (5TH)	SYSTEM	DATA LINK	ADAPTER CONFIG.
Sebring, Stratus	J, L	Teves MK-20 ABS Teves MK-20 ABS + TCS	PCI BUS	CHRY-16/ OBD II-C2
Viper	Z	Teves MK-20 ABS	PCI BUS	CHRY-16/ OBD II-C2
Intrepid, Concorde, 300M	D, E, H	Teves MK-20 ABS Teves MK-20 ABS + TCS	PCI BUS	CHRY-16/ OBD II-C2
PT Cruiser	Y, 2, 4	Teves MK-20 ABS Teves MK-20 ABS + TCS	PCI BUS	CHRY-16/ OBD II-C2
Neon	S, V	Teves MK-20 ABS Teves MK-20 ABS + TCS	PCI BUS	CHRY-16/ OBD II-C2
Pacifica	M, F	Teves MK-25 ABS Teves MK-25 ABS + TCS	PCI BUS	CHRY-16/ OBD II-C2
Caravan, Voyager, Town & Country	1, P, T, J, Y, C, H, K	Teves MK-20 ABS Teves MK-20 ABS + TCS	PCI BUS	CHRY-16/ OBD II-C2

2004 DODGE LIGHT TRUCKS/VANS

MODEL	BODY VIN (5TH)	SYSTEM	DATA LINK	ADAPTER CONFIG.
Ram Truck 1500/2500/3500	A, U	Kelsey-Hayes EBC 125 Kelsey-Hayes EBC 325	PCI BUS	CHRY-16/ OBD II-C2
Dakota	G, L	Kelsey-Hayes EBC 125 Kelsey-Hayes EBC 325	PCI BUS	CHRY-16/ OBD II-C2

2004 JEEP TRUCKS

MODEL	BODY VIN (5TH)	SYSTEM	DATA LINK	ADAPTER CONFIG.
Grand Cherokee	X, W	Teves MK-20 ABS	PCI BUS	CHRY-16/ OBD II-C2
Liberty	K, L, M	Teves MK-20 ABS	PCI BUS	CHRY-16/ OBD II-C2

4. GETTING STARTED

This chapter provides information to assist you in operating your Vetronix tester and software application. In addition to helping you identify vehicles covered by the software, it shows you how to connect your tester to the vehicle and explains how to begin performing system diagnostic functions. It is suggested that you read this manual completely before operating the tester and the system software.

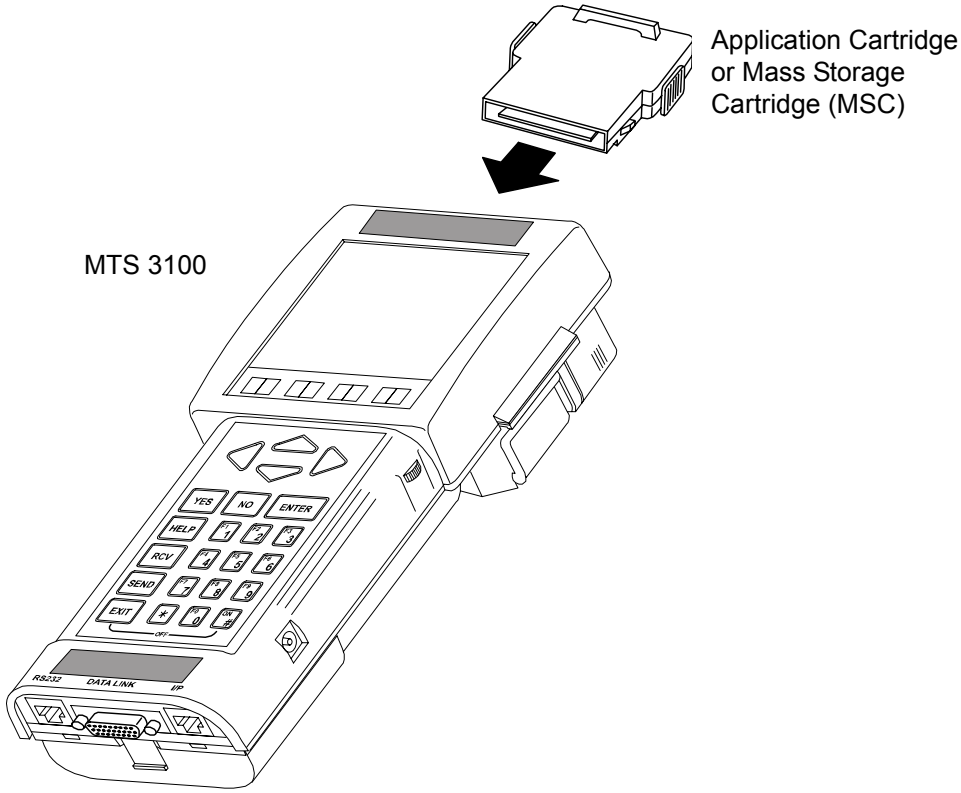
SETTING UP THE TESTER

MTS 3100

Before you operate the application software, do the following:

1. Make sure the vehicle ignition is OFF.
2. Connect the tester DLC (formerly called the ALDL) cable to the tester and tighten the screws.
3. Insert the cartridge into the slot at the top rear of the tester.

FIGURE 4-1. Inserting Cartridge into the MTS 3100



4. Install the appropriate adapter to the tester DLC cable. Refer to *Adapter and Adapter Cable Configurations on page 21* for information on selecting the correct adapters.
5. Connect the adapter cable to the vehicle 16-pin connector under the driver side dashboard. Continue to *Powering Up the Tester on page 17*.

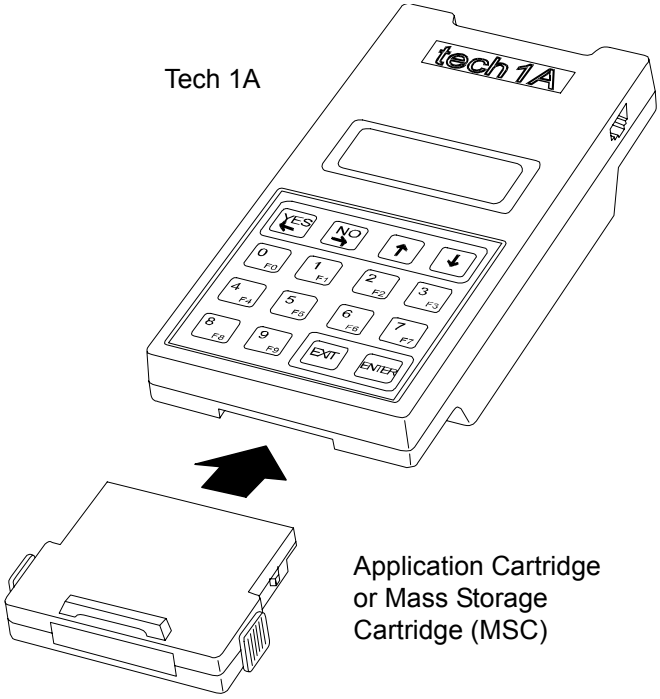
TECH 1A

Before you operate the Tech 1A, do the following:

1. Make sure the vehicle ignition is OFF.
2. Connect the tester DLC (formerly called the ALDL) cable to the tester and tighten the screws.
3. Insert the application into the Master Cartridge slot on the bottom, rear of the tester. Verify that no other "Master" cartridge is installed in the tester.

   If the system being tested uses PCI Bus data link, technicians using a Tech 1A tester must also insert the OBD II Interface Cartridge into the top slot of the Tech 1A.

FIGURE 4-2. Inserting Cartridge into the Tech 1A



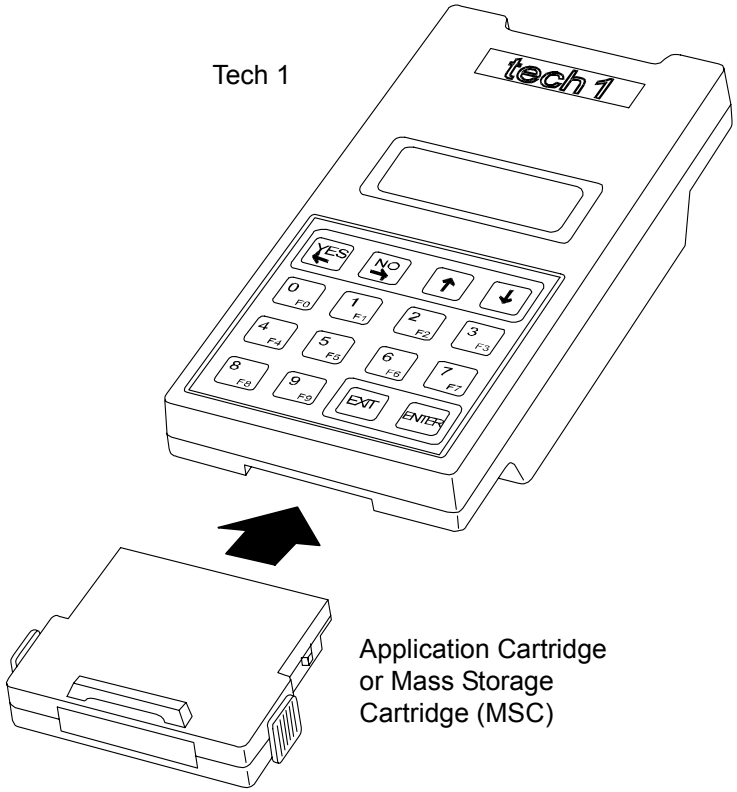
4. Install the appropriate adapter to the tester DLC cable. Refer to *Adapter and Adapter Cable Configurations on page 21* for information on selecting the correct adapters.
5. Connect the adapter cable to the vehicle 16-pin connector under the driver side dashboard. Continue to *Powering Up the Tester on page 17*.

TECH 1

Before you operate the Tech 1, do the following:

1. Make sure the vehicle ignition is OFF.
2. Connect the tester DLC (formerly called the ALDL) cable to the tester and tighten the screws.
3. Insert the application into the Master Cartridge slot on the bottom, rear of the tester. Verify that no other "Master" cartridge is installed in the tester.

FIGURE 4-3. Inserting Cartridge into the Tech 1



4. Install the appropriate adapter to the tester DLC cable. Refer to *Adapter and Adapter Cable Configurations on page 21* for information on selecting the correct adapters.
5. Connect the adapter cable to the vehicle 16-pin connector under the driver side dashboard. Continue to *Powering Up the Tester on page 17*.

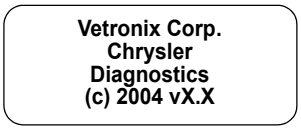
POWERING UP THE TESTER

When testing Chrysler ABS systems, the tester is powered through the 16-pin connector (except when using a Tech 1 tester). Continue to *Selecting the Application*.

SELECTING THE APPLICATION

1. A Power-up display similar to those shown below appears:

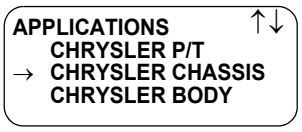
16MB Mass Storage Cartridge (MSC)



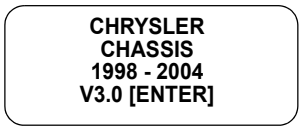
Chrysler Diagnostic Cartridge

2. Press ↑ or wait two seconds to proceed to the Applications menu screen.

   The available software applications are displayed:

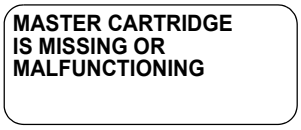


3. Select the application. If your application is on a MSC, use the ↑ and ↓ keys to move the cursor (arrow), then press ENTER. If the application is on a MAC, select the function key next to the desired application.
4. If data from a previously tested vehicle is stored in the tester memory, you can press ENTER to go to the previous software application.
5. The Chrysler Chassis identification screen is displayed.



6. If the display is correct, turn the ignition *ON* and you are ready to proceed with selecting the vehicle model year. Continue to *Perform Vehicle and/or System Selection on page 20*.

   If the display reads:



   This means that the tester is receiving power but the cartridge is not making good contact, or else the wrong DLC cable and/or adapter are installed. If this happens, do the following:

   - Remove and reinsert the cartridge making sure that the cartridge is properly seated.
   - Verify that the correct DLC cable is installed.
   - See Step 4 to determine if the vehicle you are testing requires a DLC cable adapter. If an adapter is required, verify that the correct one is installed.

If the display is blank, the tester is not receiving power. In this case, perform the following checks:

- Disconnect and reconnect the tester DC power plug at the cigarette lighter socket.
- Make sure that both the tester DC power plug and cigarette lighter socket have good, clean contacts.
- Verify that 12V power is available at the center contact of the cigarette lighter socket, and that the outside contact of the lighter socket is grounded.
- Check the vehicle's cigarette lighter fuse.
- Check the fuse in the cigarette lighter plug on the end of the tester DC power cable.

If the display is still not correct, Appendix A lists possible causes for the malfunction and recommendations to remedy the problem. If the problem persists, perform the tester Self-test as described in the basic tester Operator's Manual.

NOTE

The tester Self-test does not operate with the application cartridge installed.

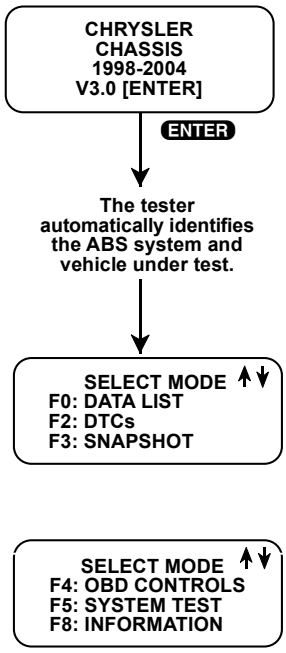
ACTIVE KEYS	
ENTER	Confirm displayed information is correct. Advance to next display. Select previously tested vehicle.
↑ , ↓	Used to select a menu item. Stop automatic menu scroll. Manually scroll menu.
EXIT	Return to previous display.

PERFORM VEHICLE AND/OR SYSTEM SELECTION

IDENTIFYING THE ABS SYSTEM

For model years 1998 and later, Chrysler vehicles have the ability to automatically identify themselves to the tester. Because the tester needs to communicate with the ABS CAB for identification, MAKE SURE THE IGNITION KEY IS ON WHEN SELECTING THE CHASSIS SOFTWARE. If the identification of the ABS system is correct, press YES and diagnosis may begin.

FIGURE 4-4. Automatic Detection of ABS System



ADAPTER AND ADAPTER CABLE CONFIGURATIONS

CHRYSLER DATA LINK	ADAPTER CONFIG.	TESTER	ADAPTER DESCRIPTION	FIGURE NUMBER
All Teves and Kelsey Hayes ABS systems using CCD or PCI Bus data link	CHRY-16	MTS 3100[a]	Chrysler Engine/CCD Vehicle Interface Module (VIM) (P/N 02002192) and 16/24 pin CCD adapter cable (P/N 3000081 or P/N 02001744)	Figure 4-5
		Tech 1A[b]		Figure 4-6
All 1994 and newer with 16-pin DLC (OBD II)	OBD II-C2	MTS 3100	Controller Area Network VIM (P/N F-00K-108-115) and 16/24-pin DLC Adapter Cable (P/N 02001744)	Figure 4-7
All Teves and Kelsey Hayes ABS systems using PCI Bus data link	OBD II-C[c]	MTS 3100	Controller Area Network VIM (P/N 02003211) and 16/24 pin DLC Adapter Cable (P/N 3000081 or P/N 02001744)	Figure 4-8
	OBD II[c]	Tech 1A	OBD II Interface Cartridge (P/N 02002178) and 16/14 pin Type 3 Adapter Cable (P/N 02001969)	Figure 4-9
			OBD II VIM (P/N 02001808) 16/24 pin VIM Adapter Cable (P/N 3000081 or P/N 02001744)	Figure 4-10
		Tech 1	OBD II VIM (P/N 02001808) and 16/24 pin VIM Adapter Cable (P/N 3000081 or P/N 02001744) and Tech 1 14/12 pin VIM Adapter (P/N 02001198)	Figure 4-11

a. If your MTS 3100 is OBD II compliant, this configuration may also be used to satisfy the OBD II Adapter Configuration requirements.

b. If your Tech 1A has an OBD II Interface Cartridge installed, this configuration may also be used to satisfy the OBD II Adapter Configuration requirements.

c. OBD II and OBD II-C are early adapter cable configurations utilized by the tester to communicate with systems connected to the OBD II DLC. If you have one of these configurations, please reference OBD II-C2 in the Adapter Config. column of the vehicle coverage tables for the vehicle you are diagnosing.

FIGURE 4-5. Chrysler-16 Adapter Configuration for MTS 3100

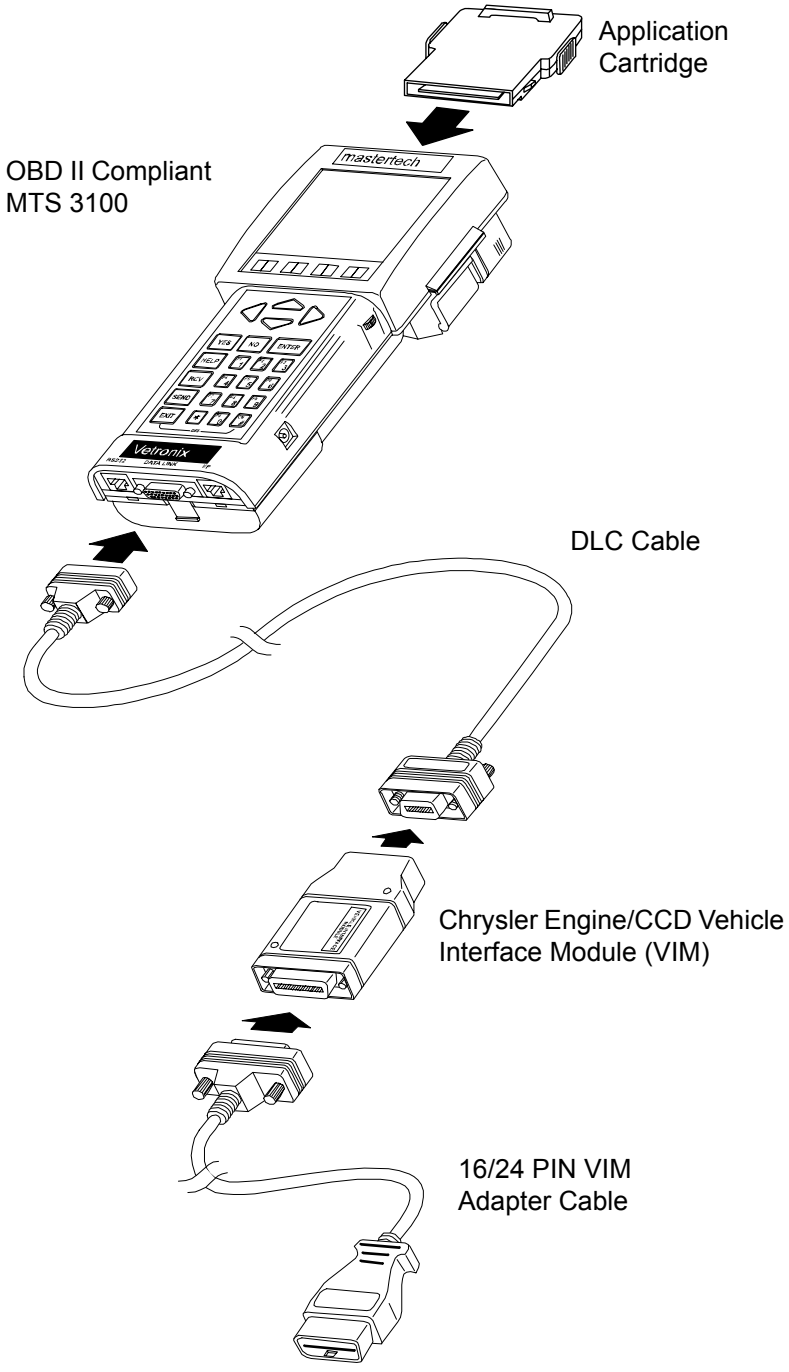


FIGURE 4-6. Chrysler-16 Adapter Configuration for Tech 1A

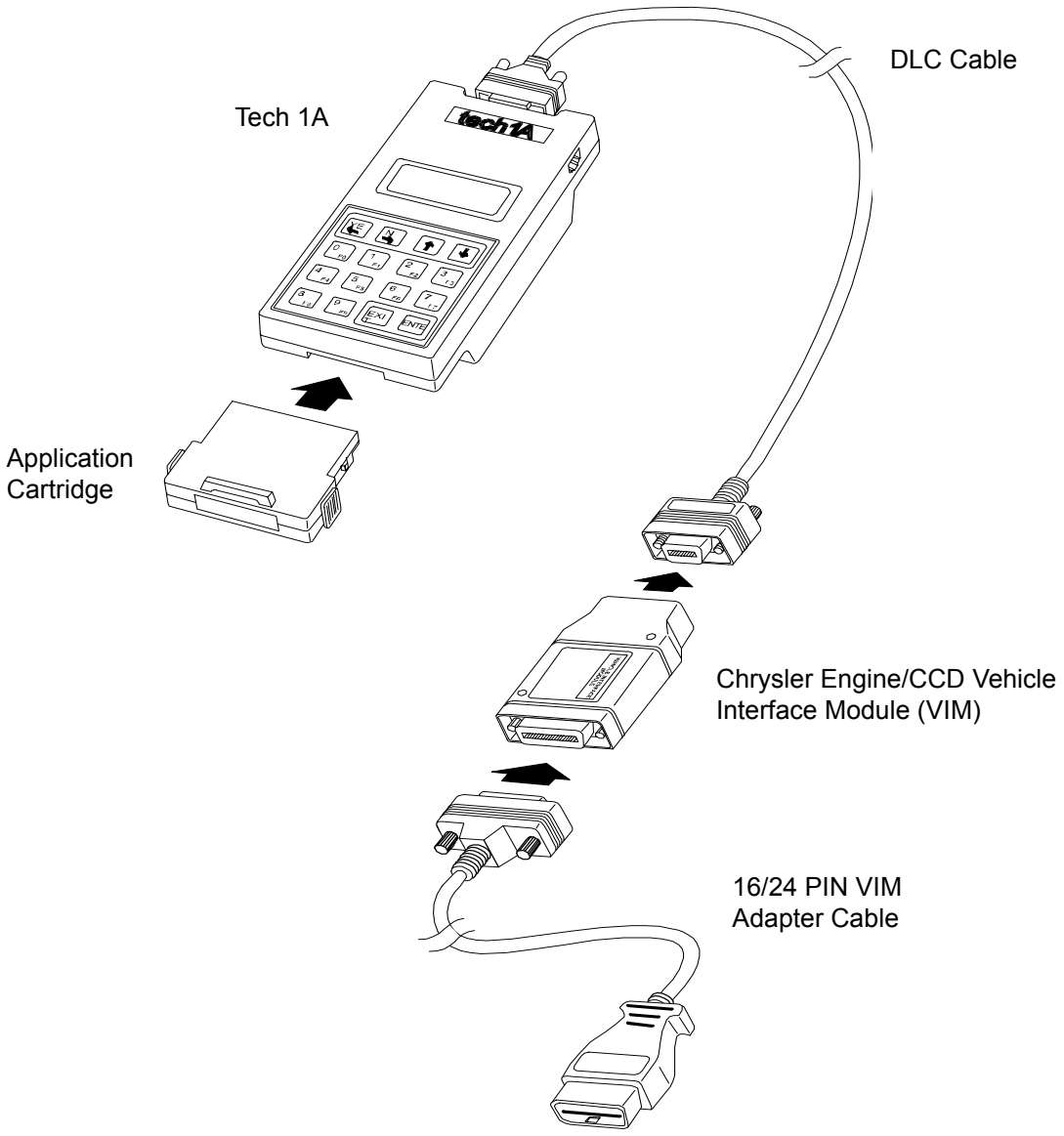


FIGURE 4-7. OBD II-C2 Adapter Configuration for MTS 3100

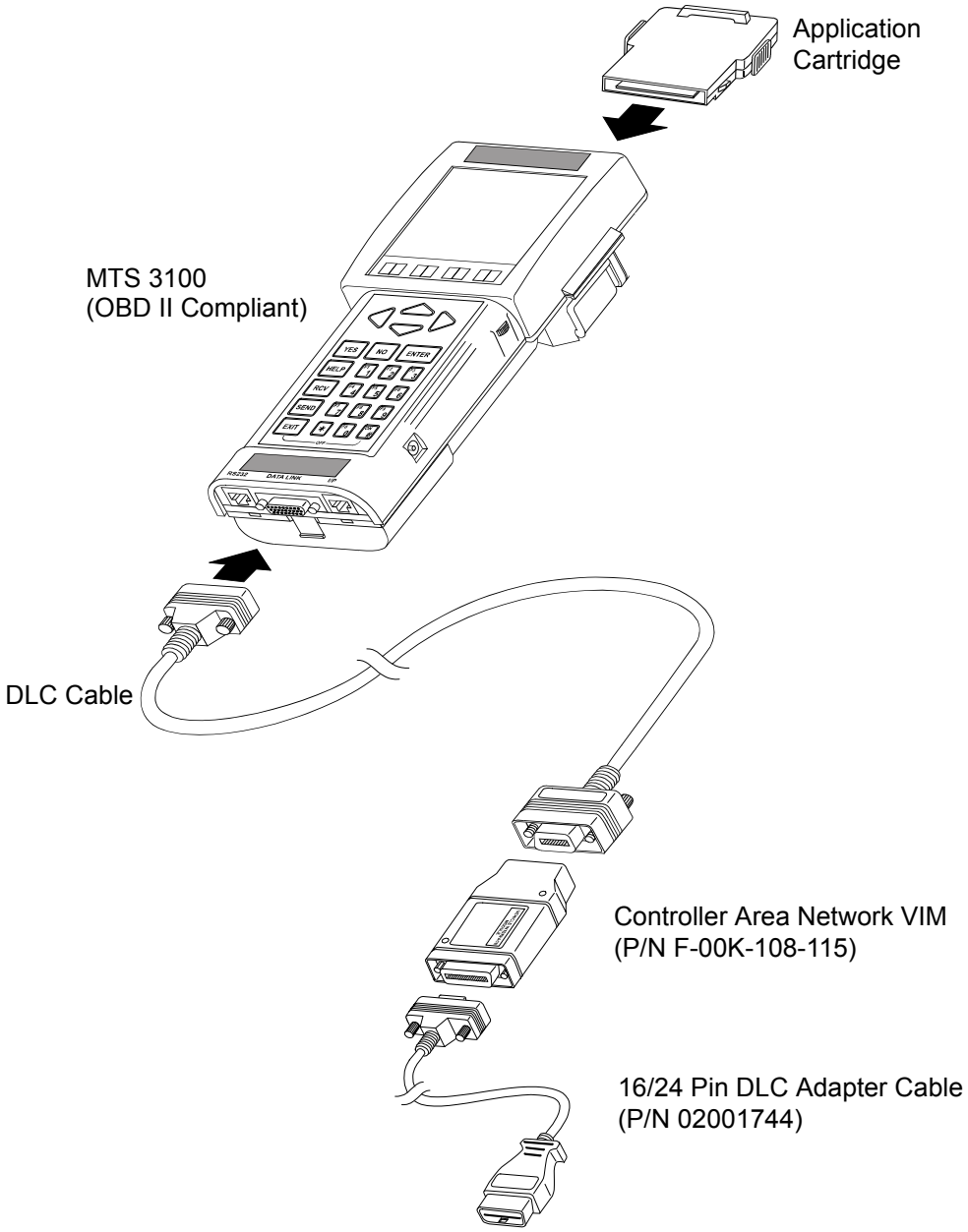


FIGURE 4-8. OBD II-C Adapter Configuration for MTS 3100

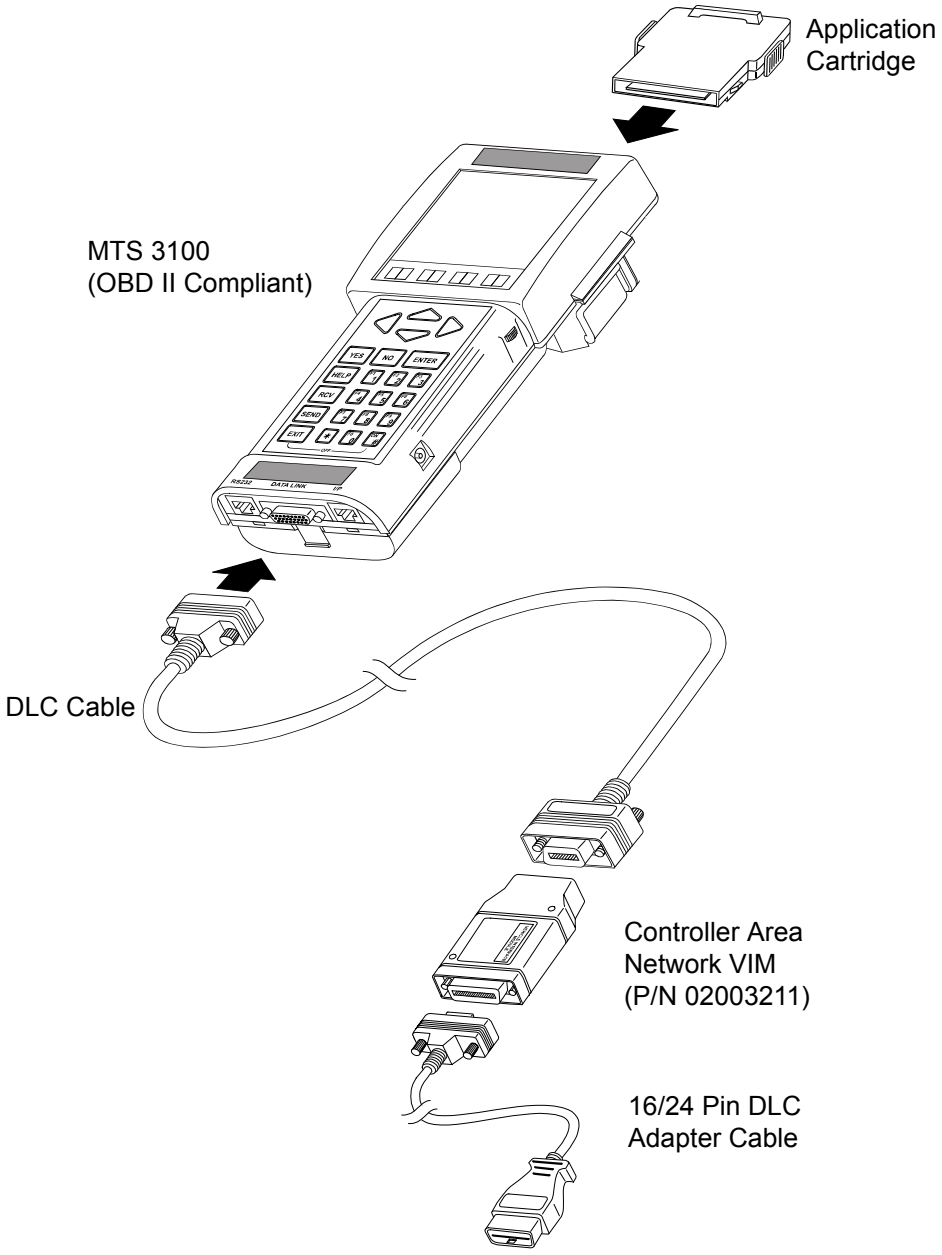


FIGURE 4-9. OBD II Adapter Configuration for Tech 1A

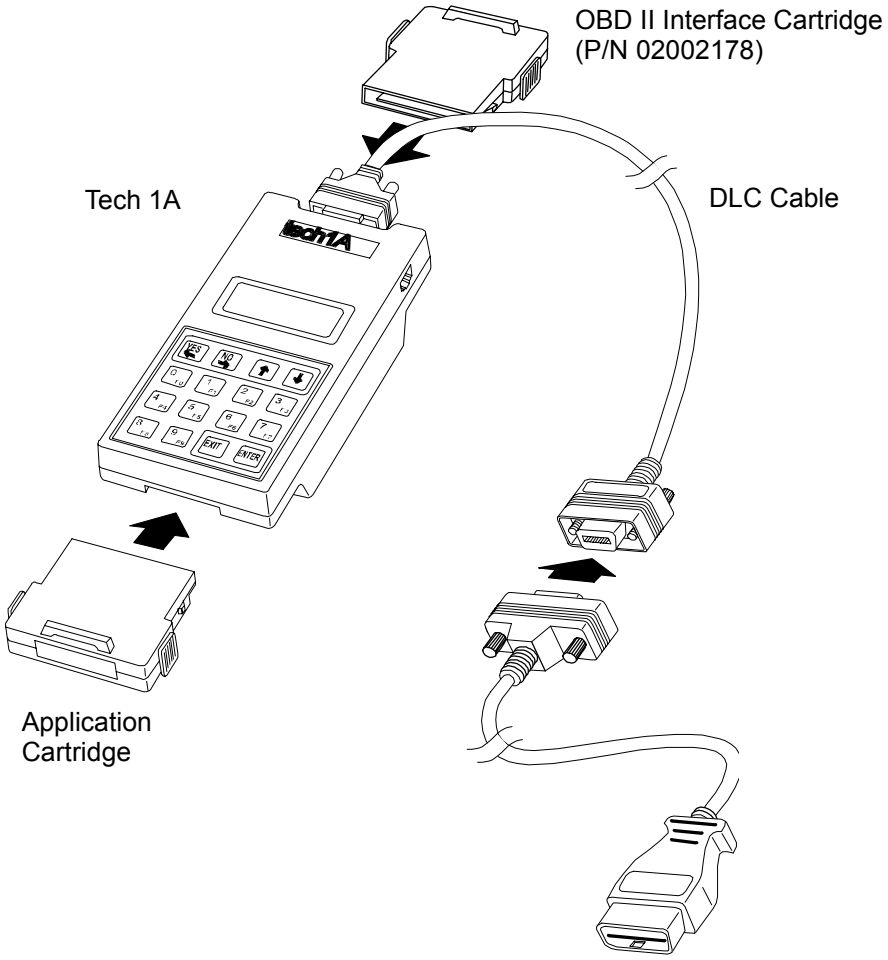


FIGURE 4-10. OBD II Adapter Configuration for Tech 1A

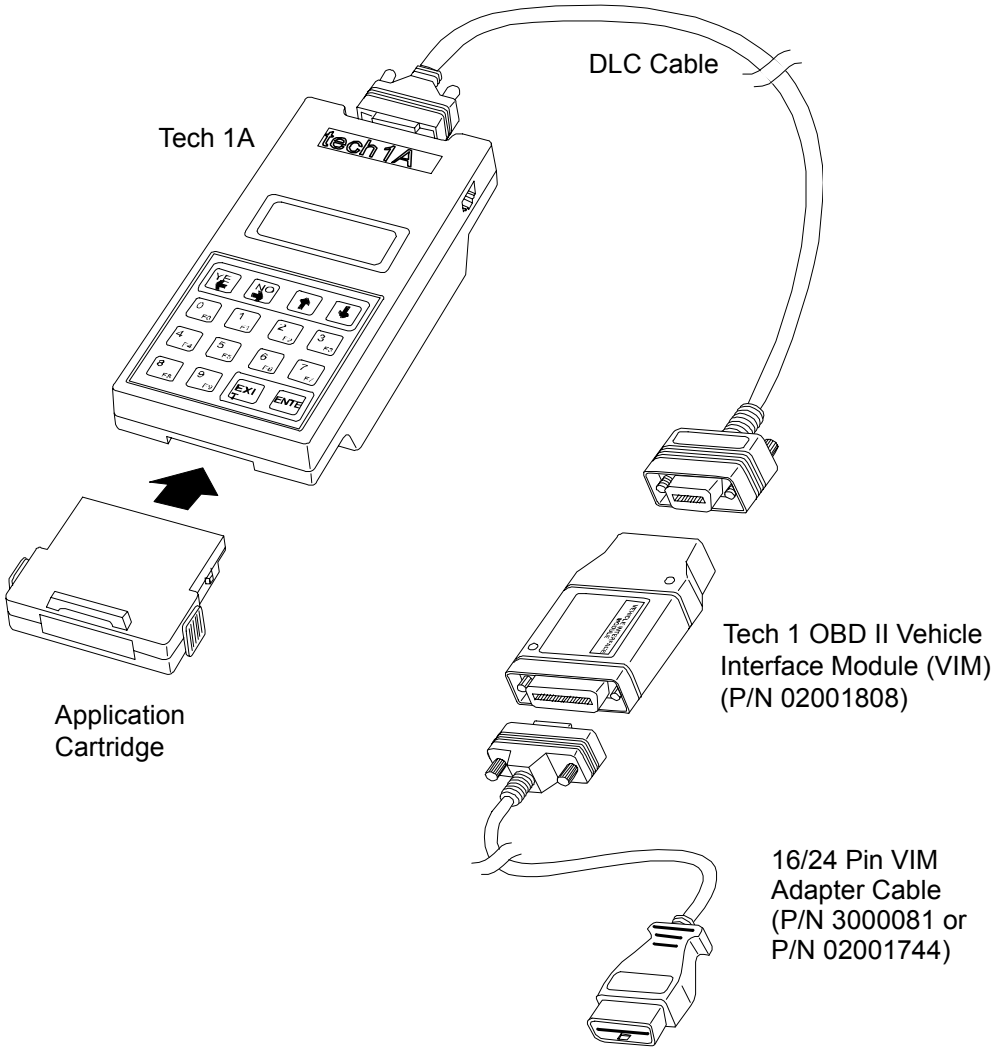
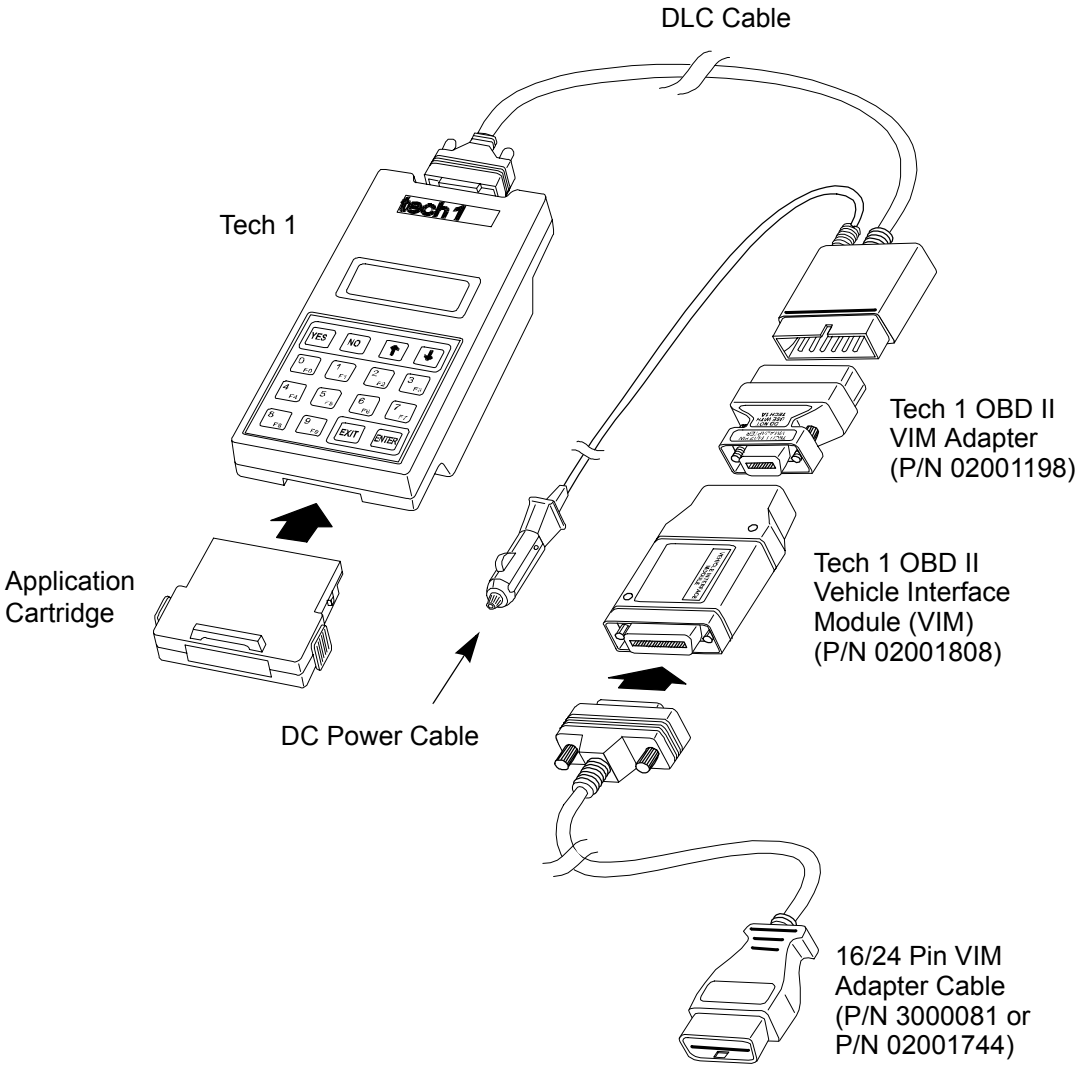


FIGURE 4-11. OBD II Adapter Configuration for Tech 1



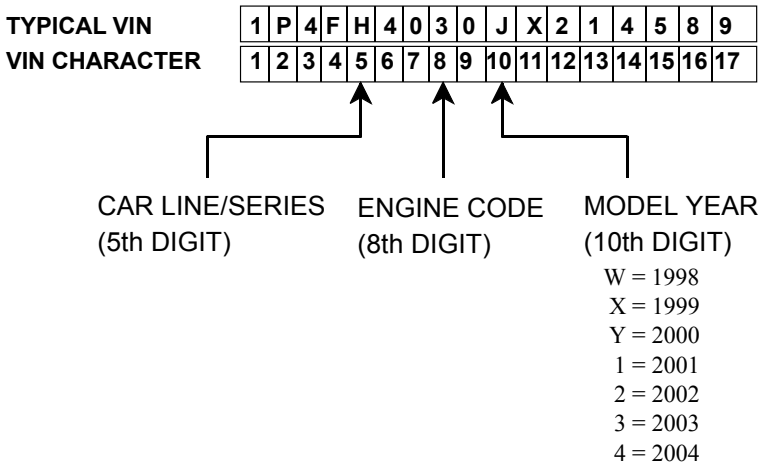
VEHICLE IDENTIFICATION NUMBER (VIN)

If you're in doubt about the body type, engine type, or model year of the vehicle being tested, refer to the Vehicle Identification Number (VIN).

On OBD II vehicles, the VIN can be read electronically from the Information Menu.

Below is an example of a DaimlerChrysler Corporation VIN. The location of the body type (car line/series), engine type, and model year characters are indicated.

Typical DaimlerChrysler Corporation VIN


TYPICAL VIN
1 P 4 F H 4 0 3 0 J X 2 1 4 5 8 9
VIN CHARACTER
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
CAR LINE/SERIES
(5th DIGIT)
ENGINE CODE
(8th DIGIT)
MODEL YEAR
(10th DIGIT)
W = 1998
X = 1999
Y = 2000
1 = 2001
2 = 2002
3 = 2003
4 = 2004

The information included in the VIN, when used with the select tree diagrams and the VIN charts (immediately following this section), can be used to verify engine type selection. The select tree diagrams list the correct 8th VIN digit for each engine type selection displayed by the tester. The VIN charts list the engine code (8th digit), model year (10th digit), and the car line (5th digit), when it is necessary to distinguish from other engine types.

5. SELECTING AND OPERATING TEST MODES

This chapter provides a detailed description of each test available in this application. Following the test descriptions, step-by-step instructions tell you how to quickly perform the test. A list of the active keys for each test is included at the end of each test mode.

TEST MODES SUMMARY

The following table gives you a quick summary of the test modes available within this application. Detailed descriptions of the test modes are given in the appropriate sections of this chapter. The tester only displays the test modes that are applicable to the vehicle being tested.

MODE	SUBMODE	DESCRIPTION
F0: Data List		The tester displays chassis data parameters in either preselected or user-defined pairs. The displayed data is specific to the vehicle being tested. *Create your own Data Pairs on page 34* explains how to select a pair of data parameters for monitoring. Input/Output states and sensor values are included in the Data List mode.
F2: DTCs	F0: Read DTCs	Displays all DTCs, both active and stored, in the ABS CAB memory. You can clear DTC information in this mode if there are any stored in memory.
	F1: Freeze Data	Displays diagnostic information related to the state of the vehicle when a DTC is stored by the ABS system.
	F4: Clear Info	Commands the clearing of the DTCs and any related information stored in memory.

MODE	SUBMODE	DESCRIPTION
F3: Snapshot		Records data before and/or after the occurrence of an intermittent fault condition. Trigger conditions are user selectable and include the ability to trigger on DTCs or by manual key press.
F4: OBD Controls	F0: Bleed Brakes	Bleed Brakes is used to perform a complete brake system bleed on the Teves and Kelsey Hayes ABS systems. The tester sends commands to the ABS CAB to cycle specific components, such as the valves and pump motor, to purge air from the hydraulic circuits.
	F1: Actuator Test	After selecting the specific component for testing, the tester sends commands to the ABS CAB to cycle the selected ABS component On and Off at a specified rate.
	F2: Hydraulic Test	Cycles the different ABS valves and pump motor to identify problems in the system.
F5: System Tests	F1: Pinion Factor	Allows you to reprogram the tire size and rear axle size into memory after ABS CAB replacement or the tire size has been changed.
F8: Information	F3: ECU Info	Displays specific data about the ABS system, such as software version and system type.
	F4: Vehicle Info F0: VIN F1: Configuration	Allows you to read the Vehicle Identification Number electronically from the ABS CAB. Displays specific data about the vehicle and the ABS control module. This information may consist of ABS configuration or system identification.

SELECTING TEST MODES

To select a test mode, simply press the key listed to the left of the test mode on the menu. Since there are up to six test modes available, keys F0 – F8 are used.

The tester displays only three test modes at a time. To see the other test modes, scroll the menu down by pressing the ↑ key. Pressing the ↓ key scrolls the menu up. Regardless of which test modes are displayed, any test mode can be selected at any time from the menu.

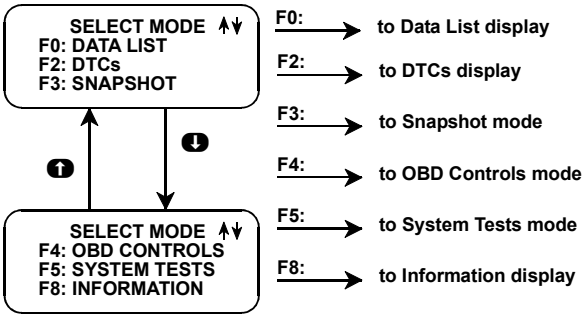


FIGURE 5-1. Selecting Test Modes

Once you have selected the test mode, operation begins. Detailed operating instructions for each test mode are given in this section. To return to the Test Mode menu, just press EXIT.

MODE F0: DATA LIST

The purpose of Data List mode is to continuously monitor ABS diagnostic data parameters. The number of available diagnostic data parameters depends on the ABS system being tested.

In order to clearly display each data parameter and its state/value the tester displays the data parameters in pre-selected pairs. While all pairs of data parameters are pre-selected, you can create you own custom pair through the process *Create your own Data Pairs on page 34*. On certain ABS systems, you also have the ability to create you own custom data list.

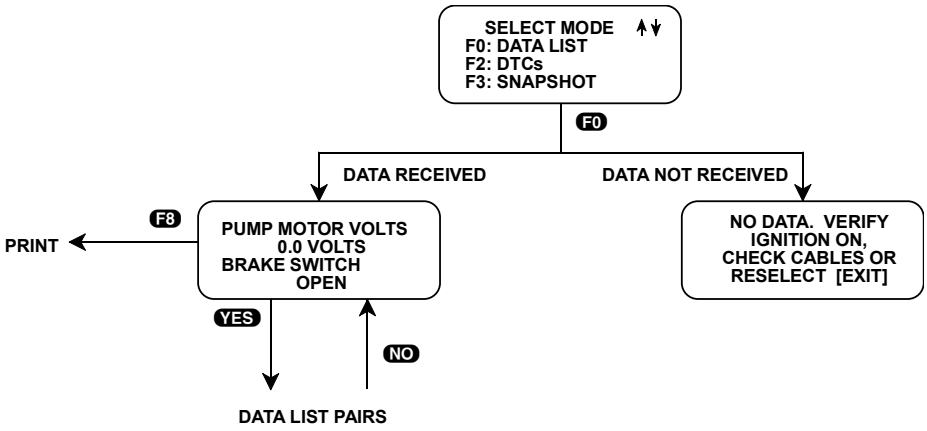
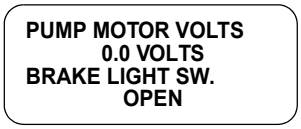


FIGURE 5-2. Data List Mode

VIEWING DATA PARAMETERS

In order to maximize the information that can be seen at one time, the tester displays data parameters in pairs. The number of pairs varies depending on the ABS system being tested. A typical pair of data parameters is shown below.



To see the other data parameter pairs available for the vehicle being tested, press either the YES or NO key. The YES key causes the tester to scroll forward through the list of pairs while the NO key causes backwards scrolling. Not every data parameter is supported by every ABS system.

CREATE YOUR OWN DATA PAIRS

You can create data parameter pairs different from the pre-programmed pairs. Any two parameters which can be monitored for the chassis system you selected can be made into a pair.

New data pairs are created simply by scrolling either the bottom or top display parameter, while the other display parameter is fixed. Pressing **F0** causes the top display parameter to be fixed, which is indicated with a "*" in the left column of the second line of the display, as shown in Figure A at the bottom of this page. Pressing **F1** causes the bottom display parameter to be fixed, as shown in Figure B. To "unfix" the top parameter, press **F1**. Press **F0** to "unfix" the lower parameter. The tester won't allow both top and bottom parameters to be fixed at the same time.

As an example, let's say you wish to create a pair with PUMP MOTOR VOLTS and BRAKE SWITCH. To do so, scroll through the pre-programmed pairs with the **YES** or **NO** key until you find a pair with PUMP MOTOR VOLTS. Fix PUMP MOTOR VOLTS by pressing **F0** if PUMP MOTOR VOLTS is the top parameter, **F1** if it is the bottom. Then scroll the other half of the display with either the **YES** or **NO** key until BRAKE SWITCH is displayed.

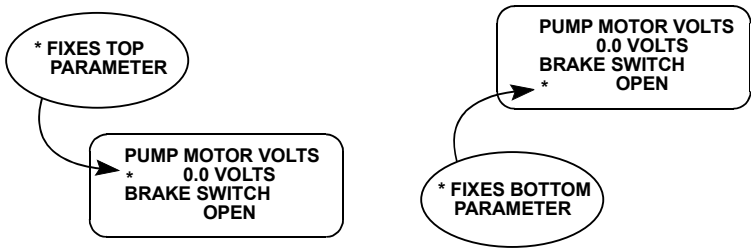


Fig. A Fig. B

FIGURE 5-3. Example of Data Pairs

ACTIVE KEYS	
YES , **NO**	Scroll through displayed data parameters.
F0	Mark top displayed parameter as "fixed" for creating your own data pairs.
F1	Mark bottom displayed parameter as "fixed" for creating your own data pairs.
EXIT	Return to Test Mode menu.

CREATE A CUSTOM DATA LIST

When testing 1998-2004 PCI Bus data link Chrysler vehicles, you have the option to view all of the parameters supported by the ABS system by selecting F0: Display All, or you can create a custom data list by selecting F1: Custom List. The update rate of the data list varies depending on the number of data parameters selected in the Custom Data List. The more parameters you select, the slower the update rate is.

Submode F0: DISPLAY DATA

Displays the data list that was last selected by the user. The data list is either a list of all parameters or the custom list that was made after the tester was powered up.

Submode F1: DATA SETUP

This allows you to set up all data parameters or build a custom data list. If you do not select Data Setup, the tester defaults to selecting a list of all diagnostic data parameters.

Submode F0: Display All

Displays all diagnostic data parameters available. The tester displays all information in the data list format. Because of the number of parameters in the data list, the update rate can be three seconds or longer.

Submode F1: Custom List

You can scroll through the list of all available parameters using the ↑ and ↓ keys. From this list, you can select any combination of parameters. To build a custom data list for display, press YES to SELECT a parameter and NO to DE-SELECT a parameter. When you finish selecting all desired parameters, press ENTER to go directly to the display mode. The tester remembers the selected parameters (until the tester is turned off), so you do not have to re-select the parameters every time.

To access the Data Setup submode, do the following:

1. Select the Data List mode from the Test Mode menu by pressing F0.
2. If the ABS system supports a Custom Data List, you may select to display all of the available data parameters or you may choose to display a user selected custom data list.
3. Scroll through the data parameters with the YES and NO keys.
4. The data parameters can be printed if the tester is connected to a compatible printer. To print the data, press F8. While data is being sent to the printer, the keyboard is disabled.
5. You may return to the Test Mode menu any time by pressing EXIT.

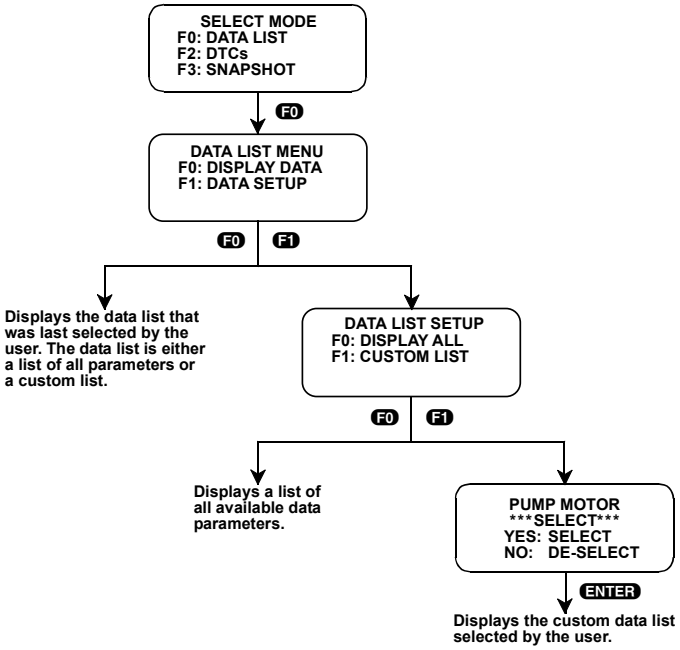


FIGURE 5-4. Data Setup

ACTIVE KEYS	
YES , NO	Select and deselect data parameters.
↑ , ↓	Scroll through data parameters while selecting a custom list.
ENTER	Display custom data list selected by the user.

MODE F2: DTCS

SUBMODE F0: READ DTCS

The purpose of the DTCs test mode is to read the ABS fault codes that are stored in the ABS CAB memory. Each DTC that is present displays a DTC description as well as a DTC number, when applicable. If no Diagnostic Trouble Codes are present, the tester displays a NO DTCs message.

Submode F0: Active

This mode, when available, displays all DTCs that are active during the current key cycle.

Submode F1: Stored

This mode, when available, displays all DTCs that are not currently active but are still stored in tester memory.

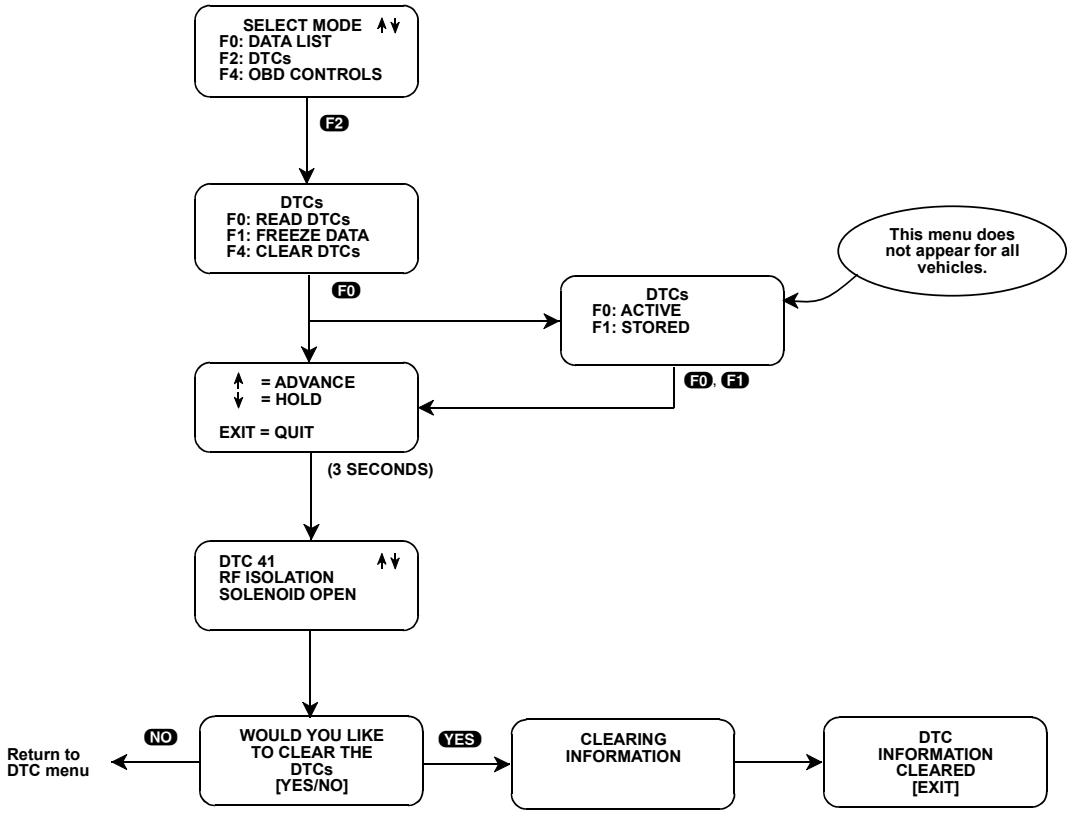


FIGURE 5-5. Example of DTC Display

SUBMODE F1: FREEZE DATA

The Freeze Data mode is only available on select Teves ABS systems using PCI Bus protocol. Freeze Data allows the user to view diagnostic information related to the state of the vehicle when a DTC is stored by the ABS system. The number of Freeze Data frames available for display is dependent on the vehicle under test.

During normal operation, Freeze Data is cleared any time the DTCs are cleared from memory.

To select Freeze Data, do the following:

1. From the Select Mode menu, press F2 to select the DTC menu.
2. Press F1 to select FREEZE DATA from the DTC menu.
3. If available, select the Freeze Data for the desired DTC. This only applies to some ABS systems.

   Freeze Data information is displayed in the data list format.

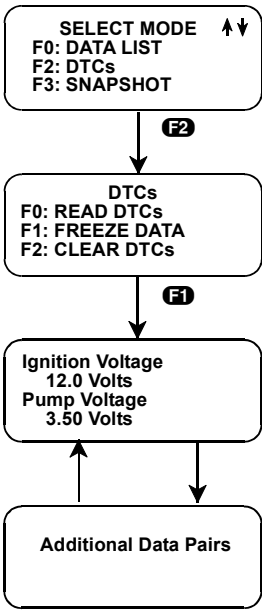


FIGURE 5-6. Example of Freeze Data Display

ACTIVE KEYS	
F1	Select FREEZE DATA.
YES, NO	Scroll through the displayed data parameters.
F0	Mark top displayed parameter as “fixed” for creating your own data pairs. Unfix the lower parameter.
F1	Mark bottom displayed parameter as “fixed” for creating your own data pairs. Unfix the upper parameter.
EXIT	Return to Test Mode menu.

SUBMODE F4: CLEAR DTCS

The purpose of Clear DTCs submode is to command the clearing of fault codes stored in the ABS CAB memory. Performing Clear DTCs also clears the information related to the stored DTCs, such as the odometer reading.

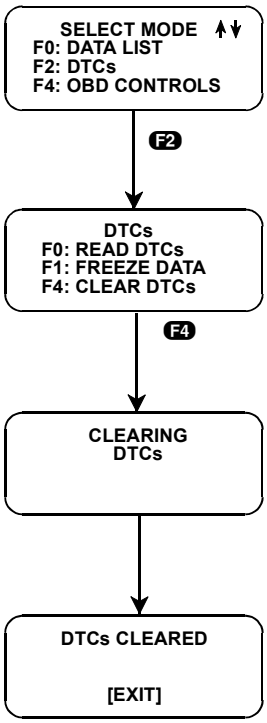


FIGURE 5-7. Clear Information

ACTIVE KEYS	
↑	Advance to next diagnostic trouble code.
↓	Holds presently displayed diagnostic trouble code.
YES	Clear Diagnostic Trouble Codes.
NO	Return to Test Mode menu.
EXIT	Return to Test Mode menu.

MODE F3: SNAPSHOT

The purpose of the SNAPSHOT test mode is to help you isolate an intermittent or transient problem by storing data parameters just before and/or after the problem occurs.

In this mode, you specify a "trigger condition" and the tester stores data both before and/or after the trigger occurrence.

After the data has been captured, you can scroll through all of the stored data for display. Data parameters are displayed in a manner identical to that of the Data List mode. You can also specify the data sample you wish to display, as described in Step 10.

In addition, the cartridge has the capability to print the captured data providing a hard copy of any selected data sample.

Note that your tester has been set up to capture data parameters at the fastest rate possible. When diagnosing anti-lock brake systems that support a custom data list, a smaller list benefits you by reducing the time between data parameter samples which can aid in intermittent fault diagnosis.

NOTE

Snapshot mode is supported by ABS systems that use the PCI Bus data link for communication.

The operation of the SNAPSHOT mode is divided into three phases: Set-Up, Data Capture, and Data Display. The sequence of operations is depicted in the flow chart on the following page.

To access the Set-up Phase of Snapshot mode, do the following:

1. Select the SNAPSHOT mode from the Test Mode menu by pressing F3.
2. Select F9: TRIG POINT to determine the trigger point position of the upcoming snapshot. The default selected is the center of the snapshot. When the trigger point is selected, the tester returns to the previous menu.

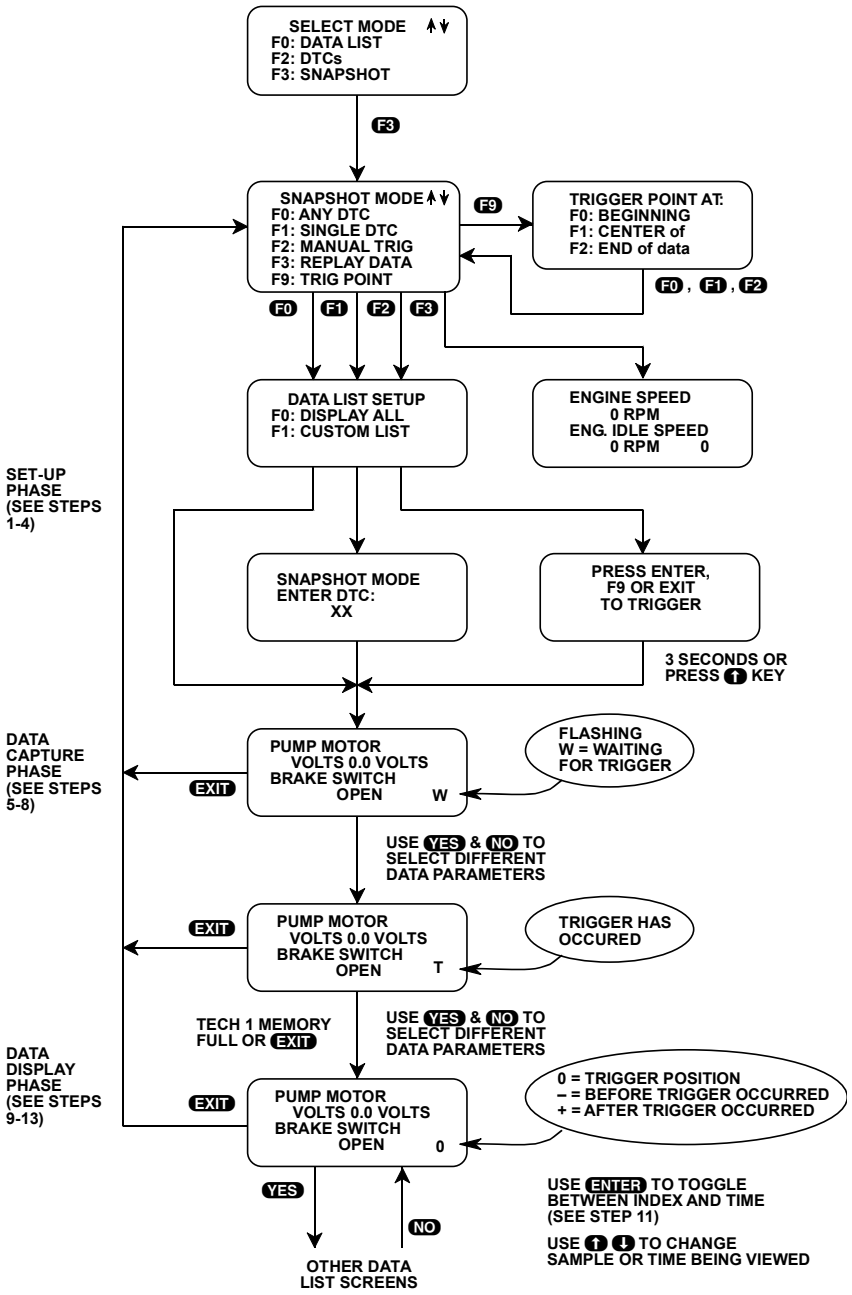
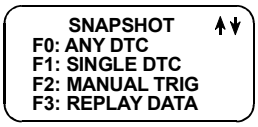


FIGURE 5-8. Example of Snapshot for ABS Systems

3. Select trigger condition by pressing the function key F0, F1, F2, displayed to the left of the trigger condition.



   You have the option of bypassing the Data Capture phase and displaying previously captured data by selecting F3:REPLAY DATA. All data captured during snapshot is retained in the tester until it is overwritten by a new snapshot or if the power is disconnected for more than 30 minutes.

   You also have the option to replay the snapshot data without being connected to the vehicle. If you enter the Chrysler Chassis software with stored snapshots and you are not connected to the vehicle, a screen asks if you want to replay the snapshot.

4. If you select F0: ANY DTC, the tester triggers the snapshot upon recognizing any DTC that is stored in the vehicle's engine controller.

   If you select F1:SINGLE DTC, the tester asks you to enter the desired fault code number. This selection is not available on vehicles that do not have DTC numbers associated with DTC descriptions.

ACTIVE KEYS	
0 - 9	Select specific diagnostic trouble code.
F0 - F2	Select trigger condition.
F3	Replay data captured in Snapshot mode.
EXIT	Return to Test Mode menu.
F9	Select trigger point position.

Data Capture Phase

5. Once the trigger condition is specified, the tester starts saving diagnostic data in its memory while displaying the data list. See *Viewing Data Parameters on page 33*.

6. While the tester is waiting for a trigger, it is continuously storing chassis diagnostic data parameters in its memory. The data is organized as a number of data “samples.”

   The value or state of each parameter is saved for each sample. If the memory fills before the trigger occurs, the “oldest” data is discarded. The data display indicates the “waiting for trigger” condition with a flashing “W” in the lower right-hand corner of the display. While waiting for the selected trigger, the EXIT, ENTER, F9 or keys can always be used to force a trigger.

7. Once the trigger occurs, the tester continues to save data samples until its memory is full. To indicate that a trigger occurred, the tester makes a “beep” sound, and the data display replaces the flashing “W” with a fixed “T.” As soon as the memory is full, the data capture terminates automatically and the tester goes on to the data display phase.

8. Pressing EXIT after the trigger has occurred terminates the Data Capture phase early, and the Snapshot mode moves to the Data Display phase.

ACTIVE KEYS	
F0	Mark top displayed parameter as “fixed” for creating your own data pairs.
F1	Mark bottom displayed parameters “fixed” for creating your own data pairs.
F8	Print most recently sampled data.
F9	Manual trigger.
YES , NO	Scroll through displayed data parameters.
ENTER	Manual trigger.
EXIT	Manual trigger. Go to data display phase of Snapshot mode.

Data Display Phase

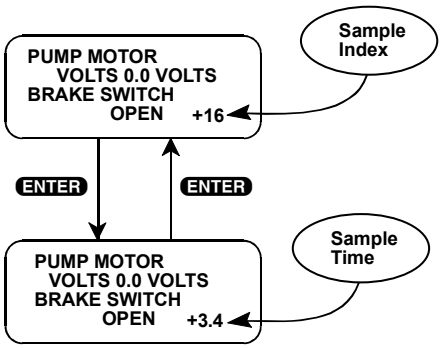
9. The Data Display phase begins with a number (initially zero) in the lower right hand corner of the display. The number zero indicates the time at which the trigger occurred. Select the data parameters to be displayed using YES and NO; see the Data List mode operating instructions.
10. Use the ↑ and ↓ keys to select the desired sample. An index is displayed in the lower right-hand corner of the tester display. Sample “0” corresponds to the trigger sample; sample “-1” is the sample immediately proceeding the trigger; sample “+1” is immediately after the trigger; and so on. The index range may be less than the maximum number of samples if enough time was not allowed for data capture before or after the trigger.

    The following keys can be used to move about more quickly in the data display phase:

    F4: Display first (earliest) sample

    F5: Display trigger sample (0)

    F6: Display last (most recent) sample
11. Pressing ENTER causes the sample time to be displayed instead of the sample index:



    The sample time display gives the time in seconds (relative to the trigger sample) at which the tester received the currently displayed sample. For example, a sample time of +3.4 means the sample was received 3.4 seconds after the trigger sample. A sample time of -0.6 seconds means the sample was received 0.6 seconds before the trigger.

    Pressing ENTER causes the tester to toggle between the sample index and sample time displays.
12. The data parameters can be printed if the tester is connected to a compatible printer.

For instructions on connecting the printer to the tester and printing the data parameters, refer to the operator's manual if you are using a Tech 1A or MTS 3100. If you are using a Tech 1, refer to the RS232C/IF Operator's Manual.

13. When you are finished viewing the sampled data, press EXIT to return to trigger select. If you are finished with the SNAPSHOT mode, press EXIT again to return to the Test Mode menu.

ACTIVE KEYS	
YES , NO	Scroll through displayed data parameters.
↑ , ↓	Scroll through selected samples.
F0 , F1	Fix top or bottom display parameter respectively.
F2	Display diagnostic trouble codes for current sample.
F4	Advance to first (earliest) sample.
F5	Advance to trigger sample (sample 0).
F6	Advance to last (most recent) sample.
ENTER	Toggle between sample index and sample time display.
EXIT	Return to Trigger Select menu.

MODE F4: OBD CONTROLS

On-Board Diagnostic (OBD) controls mode provides fast access to output controls supported by the vehicle OBD system. Certain vehicle systems allow the tester to command an output or actuator device to turn on and off. The tester that is used with this software is capable of bi-directional communication which controls the device under test, or it can cause the device under test to change state by controlling CAB input/output electronics. The specific outputs you can control depend on the vehicle selected. Providing quick and efficient diagnostic software tools is the purpose of this mode.

There are certain constraints to controlling some of the vehicle outputs. Some are determined by the vehicle ABS controller, and some are determined by the tester.

NOTE

Check and clear DTCs after performing output controls or tests. DTCs may have been set when performing any output control or test.

SUBMODE F0: BLEED BRAKES

The Bleed Brakes procedure is used to perform a complete brake system bleed on the Teves and Kelsey Hayes 4-wheel disc brake ABS systems. The procedure of bleeding involves a standard brake bleeding procedure followed by this scan tool procedure to cycle and bleed the CAB pump and the solenoids. A second standard brake bleeding procedure is then required to purge any remaining air from the system.

The Bleed Brakes Procedure may vary between ABS systems and body types.

To select the Bleed Brakes procedure, do the following:

1. From the OBD Controls menu, select Bleed Brakes by pressing **F0**.
2. Follow the instructions displayed on the tester.
3. At the end of the test, the tester informs you that the process is complete.

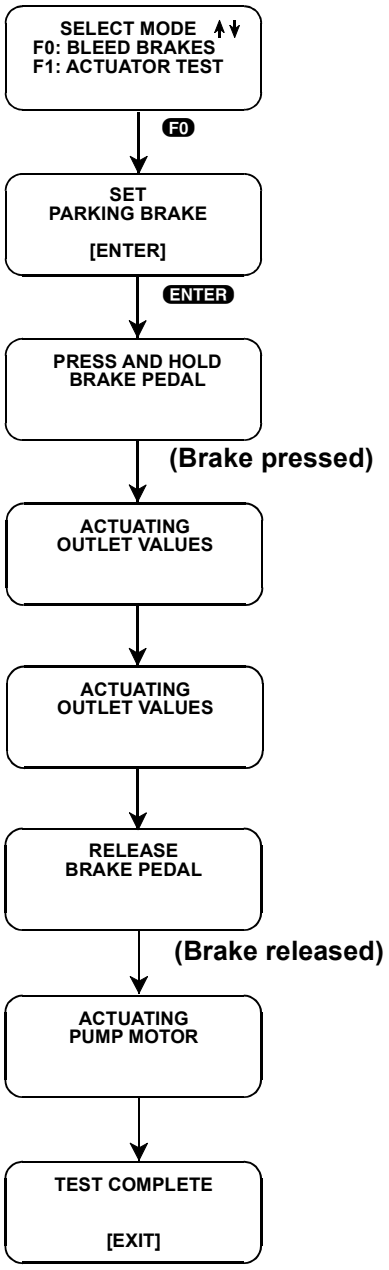


FIGURE 5-9. Example of a Bleed Brakes Procedure

SUBMODE F1: ACTUATOR TEST

The actuator tests available for the Kelsey Hayes and Teves ABS systems allow you to command actuation of different ABS components such as valves, pump motor, and power relay. The tester automatically sends the command to energize and then de-energize the component to avoid damage to the component.

To select the Actuator Test, do the following:

1. Select OBD CONTROLS from the Select Mode menu by pressing **F4**.
2. Select ACTUATOR TESTS from the OBD Controls menu by pressing **F1**.
3. Select the ABS component that you would like to actuate On and Off.
4. The tester performs actuation on the selected ABS component.
5. Press **EXIT** to stop actuation and return to the previous menu.

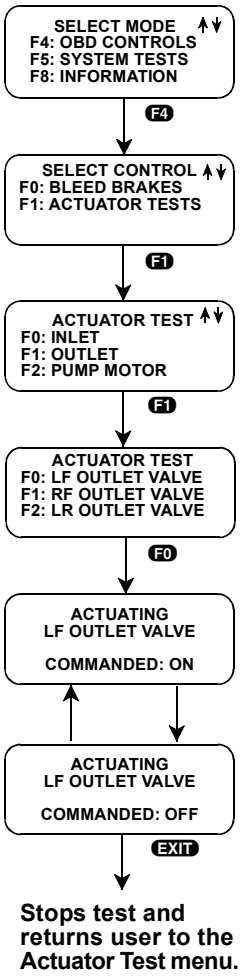


FIGURE 5-10. Example of an Actuator Test

ACTIVE KEYS	
F0 - F9	Specify actuator to control.
ENTER	Begin controlling specified actuator.
EXIT	Exit from Actuator Tests mode and return control of selected output to the CAB.

SUBMODE F2: HYDRAULIC TEST

The Hydraulic Valve Test is supported by the Teves ABS system. This test cycles the different ABS valves and the pump motor to identify whether a problem in the system is detected. By following the directions on the screen, the user tests all relevant ABS components.

To select Hydraulic Valve Test, do the following:

1. Select OBD Controls from the Select Mode menu by pressing F4.
2. Select Hydraul. Test from the Select Control menu by pressing F2.
3. Follow the instructions displayed on the tester.

MODE F5: SYSTEM TESTS

System Tests are diagnostic routines which incorporate tester to vehicle bi-directional command messages for system or device control or programming. The tester performs these tests interactively, with communication from itself to the vehicle ABS CAB. All System Tests return status information after a feature or function has been performed. When these tests are completed, a result is displayed indicating status of the system, procedure, or device under test.

SUBMODE F1: PINION FACTOR

The Pinion Factor procedure allows you to read and/or change the tire size and rear axle ratio on applicable Dodge truck and Jeep vehicles. The Pinion Factor is used by the on-board system to calculate vehicle speed and mileage. Any changes in the final drive ratio that are not changed in the Pinion Factor affect vehicle braking performance. Only the predetermined tire sizes and axles can be selected. Non-production sizes are not available because they are not emission certified for the powertrain system.

Submode F0: Read

This submode allows you to read the existing tire size and the rear axle ratio that is calibrated in the ABS CAB. If the tester displays “Valid”, this only means that the corresponding tire size or rear axle size has not been provided to Vetronix.

To read the Pinion Factor, do the following:

1. Select SYSTEM TESTS from the Select Mode menu by pressing F5.
2. Select Pinion Factor from the System Test menu by pressing F1.

3. Select Read Pinion Factor from the Pinion Factor menu by pressing F0.
4. The existing tire size and rear axle ratio are displayed by the tester.

Submode F1: Reprogram

This submode allows you to reprogram the existing tire size and rear axle ratio that is calibrated in the ABS CAB. A list of tire sizes and rear axles applicable to the vehicle under test are displayed. Use the ↑ / ↓ keys to scroll through your selections. After selecting a tire size and rear axle ratio, the tester attempts to reprogram the Pinion Factor according to your selection.

To reprogram the Pinion Factor, do the following:

1. Select SYSTEM TESTS from the Select Mode menu by pressing F5.
2. Select Pinion Factor from the System Test menu by pressing F1.
3. Select Reprogram Pinion Factor from the Pinion Factor menu by pressing F1.
4. Use the ↑ / ↓ keys to select the model of the tire you are placing on the vehicle.
5. Press ENTER to accept the model of the tire.
6. Use the ↑ / ↓ keys to select the tire size.
7. Press ENTER to accept the selected tire size.
8. Use the ↑ / ↓ arrow keys to select the rear axle type you are placing on the vehicle.
9. Press ENTER to accept the selected rear axle type.
10. The tester attempts to program the CAB with your selections.
11. The tester displays status of your programming attempt.

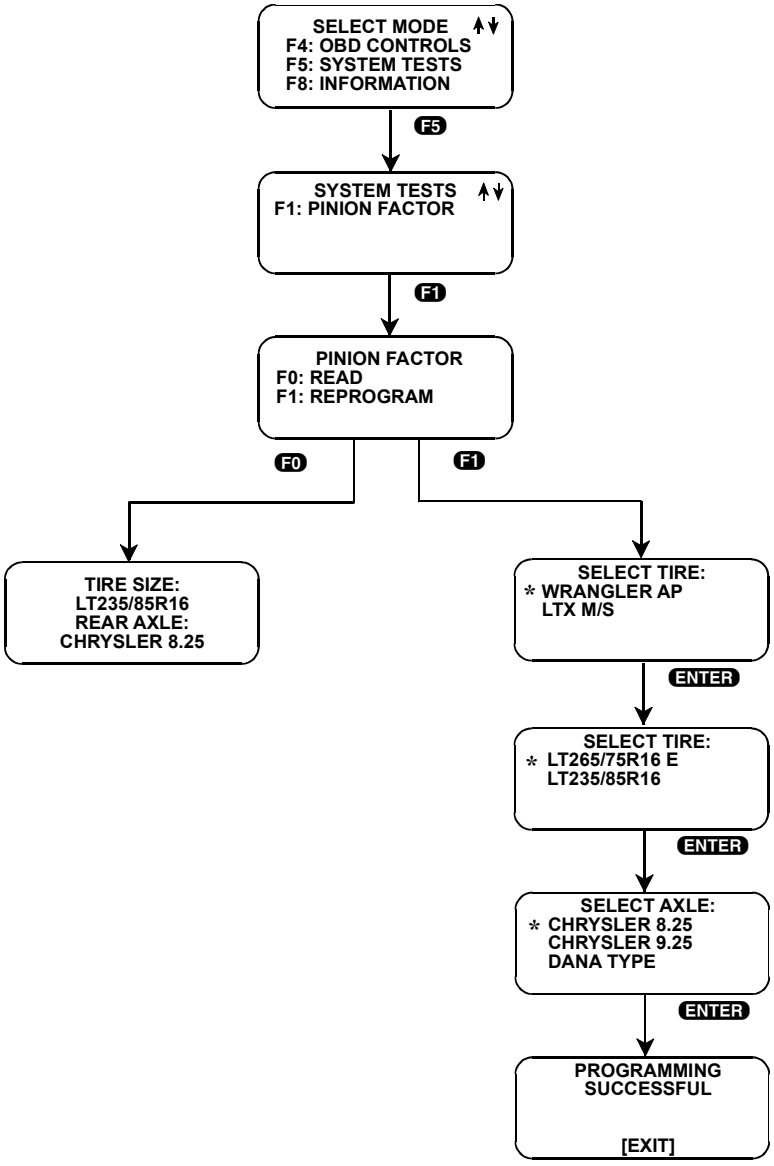


FIGURE 5-11. Example of Pinion Factor

ACTIVE KEYS	
F1	Select Pinion Factor from System Test menu. Select to Reprogram Pinion Factor.
F0	Select to Read Pinion Factor.
ENTER	Selects desired tire size. Selects desired rear axle.
↑, ↓	Scrolls through the different tire models and sizes available for selection.
EXIT	Return to the Pinion Factor menu.

MODE F8: INFORMATION

When performing diagnostic routines on the vehicle under test it may be necessary to be access information about the ABS system. Selecting Information mode allows you to view helpful information that is particular to the vehicle under test. This information may consist of software version, ABS configuration, or ABS system identification.

SUBMODE F3: ECU INFO

This mode allows you to view information about the vehicle and the ABS control module. This information may consist of software version, ABS configuration, or ABS system identification, and model year.

To select ECU Information, do the following:

1. Select Information from the Select Mode menu by pressing F8.
2. Select ECU Information from the Information menu by pressing F3.
3. The tester displays information about the vehicle that is being tested.
4. Press EXIT to return to the Information menu.

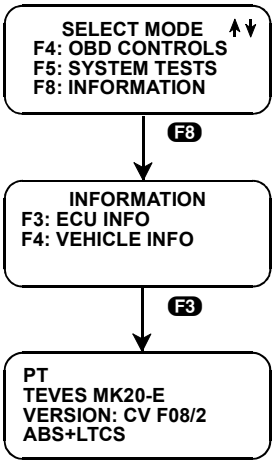


FIGURE 5-12. ECU Information

ACTIVE KEYS	
↑	Advances to next display and resumes 3 second cycling.
↓	Freezes current display.
EXIT	Return to Information menu.

SUBMODE F4: VEHICLE INFO

When performing diagnostic routines on the vehicle under test it may be necessary to be access information about the ABS system. Selecting Vehicle Information mode allows you to view helpful information that is particular to the vehicle under test. This information may consist of ABS configuration or VIN information.

Submode F0: VIN

The following Vehicle Information mode is only available for certain ABS systems. The tester electronically reads the VIN for the vehicle being tested and displays it on the tester. VIN programming is not available in the Chrysler Chassis Application. VIN programming is supported in the Chrysler Powertrain Application.

To read the VIN, do the following:

1. Select Information from the Select Mode menu by pressing F8.
2. Select Vehicle Information from the Information menu by pressing F4.
3. Select VIN from the Vehicle Information menu by pressing F0.
4. The tester displays vehicle VIN as it is read by the tester.
5. Press EXIT to return to the Information menu.

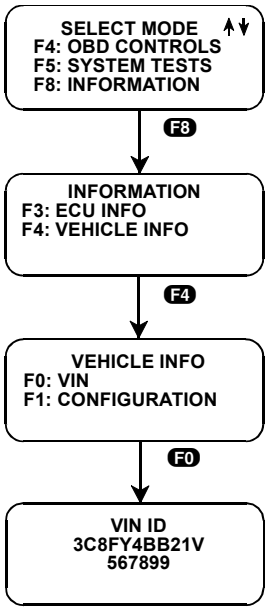


FIGURE 5-13. VIN ID

ACTIVE KEYS	
F4	Select VIN ID from Information menu.
EXIT	Return to Information menu.

Submode F1: Configuration

While performing diagnostic routines on the vehicle under test it may be necessary to be provided with quick access information. Selecting System Information mode shall display helpful information about the vehicle or ABS control module. This information may consist of the ABS configuration or ABS system identification.

To select Configuration, do the following:

1. Select Information from the Select Mode menu by pressing F8.
2. Select Vehicle Info from the Information menu by pressing F4.
3. Select Configuration from the Vehicle Info menu by pressing F1.
4. The tester displays information about the vehicle that is being tested.
5. Press EXIT to return to the Information menu.

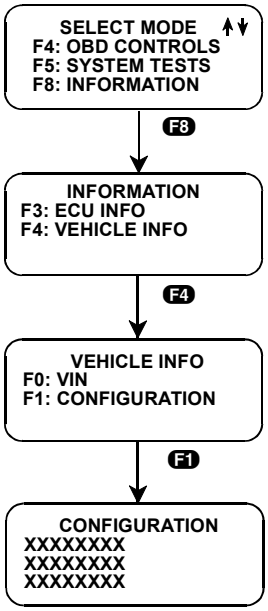


FIGURE 5-14. Configuration

ACTIVE KEYS	
↑	Advances to next display and resumes 3 second cycling.
↓	Freezes current display.
EXIT	Return to Information menu.

6. FINISHING UP

After using the application, do the following:

1. If the repairs are complete, clear the codes from memory before test driving to see if they recur or before releasing the vehicle to the customer.
   - If you have cleared the codes for a component but the codes are still set, then the conditions which caused the codes to be set may still be present. Refer to the OEM service manual to isolate the problem.
2. If the repairs are not yet complete, or if you want to continue testing at a later time, do not clear the codes from memory. Print a copy of the codes or write the codes down for comparison to the codes displayed when testing is resumed.
3. Disconnect the tester from the cigarette lighter plug or the battery terminal adapter.
4. Disconnect the cables and adapters from the vehicle's DLC. You may want to inspect the cable, connector, and cigarette lighter for any damage or corrosion.
5. Store all hardware components in the tester storage case.

NOTE	If the tester becomes dirty, clean it by wiping it with a rag dampened with mild detergent or hand soap. Avoid using harsh, petroleum-based cleaning solvents such as acetone, benzene, and trichloroethylene, as they may damage the tester. Although the tester is water resistant, it is not waterproof, so be sure to thoroughly dry off the tester prior to storage. Do not submerge the tester in water.

A. IF YOU'RE HAVING A PROBLEM

Although the Tech 1, Tech 1A, and MTS 3100 are designed to give you years of trouble-free service, occasional problems may occur that require special attention. Some of these problems may be corrected with a few simple steps. Examples of most of the displays which you might see under abnormal conditions are shown. In addition, the most likely cause for the condition is given as well as other possible causes and recommendations on how to isolate or eliminate the problem. If the problem appears to be in the tester, perform the Self-test as described in the Operator's Manual.

BLANK SCREEN

Most Likely Cause

- Faulty cable.
- Blown power cable fuse (replace with 3A fuse).

Other Possible Causes

- No power is applied to the tester.
- Power supply is malfunctioning.

Recommendations

- Plug the tester into another vehicle to verify proper operation.
- If tester is powered by DC power cable, check for 12 volt power at the cigarette lighter.
- Check for proper polarity of 12 volt power (center conductor of cigarette lighter socket should be positive).
- If tester is powered by the DLC, check for 12V power at the vehicle DLC. If either is faulty, connect and ground the DC power cable to the tester or DLC cable then plug the cable into the cigarette lighter.

SCREEN DISPLAYS SOLID BARS

Most Likely Cause

- Two master cartridges are installed.

Other Possible Causes

- Master cartridge is malfunctioning.
- Tester is malfunctioning.

Recommendations

- Make sure that only one master cartridge is installed in the tester.
- Remove all cartridges and see if "MASTER CARTRIDGE MISSING OR MALFUNCTIONING" message is displayed. If it is, try installing another master cartridge.

TESTER DOES NOT RECOGNIZE APPLICATION CARTRIDGE OR CARTRIDGE IS MALFUNCTIONING

Most Likely Cause

- Master cartridge is not installed.

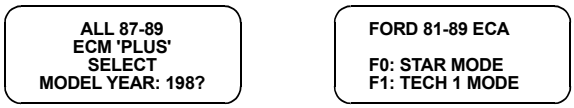
Other Possible Causes

- Dirty contacts on the master cartridge connector.
- Try a different master cartridge.

Recommendations

- Verify that a master cartridge is installed.
- Clean contacts on master cartridge connector with alcohol.
- Try a different master cartridge.

WRONG DISPLAY AFTER POWER IS APPLIED



Most Likely Cause

- Wrong master cartridge is installed.

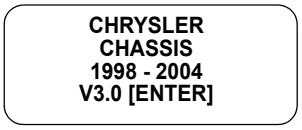
Other Possible Causes

- Master cartridge is malfunctioning.
- Tester is malfunctioning.

Recommendations

- Verify that the Chrysler Chassis Application cartridge or Mass Storage Cartridge is installed in the bottom slot of the tester and if required, the OBD II interface cartridge is installed in the top slot of the tester.
- Try another application cartridge.
- Perform the self-test as described in the tester operator's manual.

KEYBOARD OR DISPLAY LOCKED UP OR PROGRAM INTERMITTENTLY RETURNS TO TITLE SCREEN



Most Likely Cause

- Datalink Cable loose or bad.

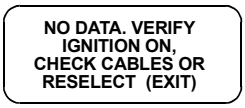
Other Possible Causes

- Master Cartridge loose or dirty contacts.
- Cigarette lighter power intermittent.
- Tester malfunction.

Recommendations

- Cycle power to the tester (unplug and re-plug the cigarette lighter adapter).
- Check tester cartridge socket and cartridge edge connector.
- Check Datalink Cable and Connector for wear or corrosion.

TESTER IS NOT RECEIVING DATA



Most Likely Cause

- Ignition switch is OFF.

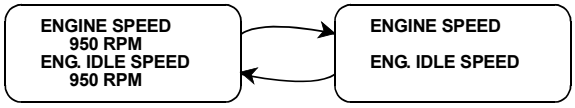
Other Possible Causes

- Datalink Cable loose or bad connector-pins loose or corroded.
- Chrysler adapter-Datalink Connector cable problems.
- Bad CAB or vehicle network problem.
- Vehicle data link is different than what is expected by the tester.

Recommendations

- Verify a good Datalink Cable/Chrysler adapter connection.
- Cycle power to the tester.
- Run the Self-test.

DATA LIST PARAMETERS FLASH ON AND OFF



Most Likely Cause

- Datalink Cable/Chrysler adapter loose or bad.

Other Possible Causes

- Datalink Cable connector-pins loose or corroded.
- Chrysler adapter pins loose or corroded.
- Connector cable problems.
- Intermittent CAB problem or vehicle network problem.

Recommendations

- Verify a good cable connection.
- Cycle power to the tester.

B. DATA LIST PARAMETER DESCRIPTION

The tester is capable of displaying a wide variety of diagnostic data parameters in Data List mode and Snapshot mode. Diagnostic Data parameters displayed in Snapshot mode are the same as those displayed in Data List mode. Data List information is communicated to the tester via the Chrysler CCD data link or the Chrysler PCI Bus data link. The information displayed on the tester is the same information that the CAB is using to determine system operation. This section contains descriptions of the diagnostic data parameters, a description of the units, and a range of the analog parameters. Analog ranges are the widest possible ranges and not necessarily realistic minimum and maximum values.

There are two basic types of data parameters: discrete and analog. Discrete parameters display information that can only be in one distinct state at a time (e.g., ON or OFF). Switches and solenoids are examples of discrete parameters. Analog parameters are used to represent quantities and are displayed as a value with the appropriate units. Examples of analog parameters include Vehicle Speed or Ignition Voltage.

Every vehicle CAB has a set of supported diagnostic data parameters that are unique to the vehicle being tested. While the tester is capable of displaying any parameter in this section, not all diagnostic data parameters are available on all vehicles.

ANTI-LOCK BRAKE SYSTEM PARAMETERS

ABS/EBD WARNING LAMP

STATES
On / Off

The ABS/EBD Warning Lamp is controlled by the CAB via the PCI bus. If the ABS Lamp is On, a system related problem has been detected and diagnostic action needs to be taken.

ABS LAMP STATE

STATES
On / Off

The ABS Lamp is controlled by the CAB. If the ABS Lamp is On, a system related problem has been detected and diagnostic action needs to be taken.

ABS POWER RELAY

STATES
On / Off

ABS Power Relay is an output signal that is sent by the CAB.

BRAKE FLUID

UNITS	RANGE
VOLTS	0 – 5V

Brake Fluid voltage is an analog input signal that is read by the CAB. The CAB uses the Brake Fluid voltage to monitor the status of the Brake Fluid Level Switch Circuit

BRAKE FLUID LEVEL

STATES
OK / Low

Brake Fluid Level is an input signal that is read by the CAB. The CAB uses the Brake Fluid Level to monitor the status of the brake fluid.

BRAKE LIGHT SWITCH

STATES
Open / Closed

Brake Light Switch is an input signal that is read by the CAB. The CAB uses the Brake Light Switch to monitor the status of the brake pedal.

BRAKE PEDAL SWITCH

STATES
Pressed / Released

Brake Pedal Switch is an input signal that is read by the CAB. The CAB uses the Brake Pedal Switch to monitor the status of the brake pedal.

DUMP VALVE COMMAND

STATES
On / Off

The Dump Valve is normally in the Off position allowing fluid to the wheels. A Dump Valve is one of the components controlled by the ABS CAB during an ABS condition. The dump valve is controlled On to release pressure to the accumulators causing the pressure to the wheel to be decreased.

FLUID LEVEL WARNING LAMP

STATES
On / Off

The Fluid Level Warning Lamp is controlled by the CAB. If the Fluid Level Warning lamp is On, low brake fluid has been detected.

G SWITCH #1
G SWITCH #2

STATES
Open / Closed

The G Switch parameter is monitored by the CAB at all times. The G Switch identifies a vehicle's sudden deceleration rates using mercury.

IGNITION VOLTAGE

UNITS	RANGE
Volts	0 – 19V

Ignition Voltage is an analog input signal that is read by the CAB. The CAB uses the Ignition Voltage to detect ignition on or ignition off status.

INLET VALVE

STATES
On / Off

The Inlet Valve is spring loaded in the normally open position. An Inlet Valve is one of the components controlled by the ABS CAB during an ABS condition. The inlet valve is controlled closed to prevent any further pressure increase.

ISOLATION VALVE COMMAND

STATES
On / Off

The Isolation Valve is spring loaded in the normally off position. An Isolation Valve is one of the components controlled by the ABS CAB during an ABS condition. The isolation valve is controlled closed to isolate the master cylinder hydraulic circuit.

NUMBER OF DTCS

RANGE
0 – 255

Number of DTCs is a parameter that displays the number of Diagnostic Trouble Codes stored in the CAB memory.

ODOMETER

UNITS	RANGE
MILES	0 – 134215

Odometer is the number of miles stored in the CAB memory. Resolution of this parameter can cause the read value to be off by up to 2 miles.

OUTLET VALVE

STATES
On / Off

The Outlet Valve is spring loaded in the normally closed position. An Outlet Valve is one of the components controlled by the ABS CAB during an ABS condition. The outlet valve is controlled open to release pressure to the accumulators.

PARK BRAKE WARNING LAMP

STATES
On / Off

The Park Brake Warning Lamp is controlled by the CAB. If the Red lamp is On, the parking brake is detected and/or there is a ABS system malfunction.

PUMP MOTOR

STATES
On / Off

The Pump Motor provides the extra amount of brake fluid needed during an ABS condition. The CAB may turn on the pump motor during an ABS condition or to purge the accumulators after a condition.

PUMP VOLTAGE

UNITS	RANGE
VOLTS	0 – 16V

Pump Voltage is an analog input signal that is read by the CAB. The CAB uses the Pump Voltage to monitor the status of the Pump Motor.

RED LAMP STATE

STATES
On / Off

The Red Lamp is controlled by the CAB. If the Red lamp is On, the parking brake is detected and / or there is a ABS system malfunction.

REFERENCE VOLTAGE

UNITS	RANGE
Volts	0 – 10V

Reference Voltage is an analog input signal read by the CAB.

SPECIAL VALVE #1
SPECIAL VALVE #2

STATES
On / Off

The Special Valve is spring loaded in the normally open position. A Special Valve only closes when Traction Control is applied to reduce wheel slippage.

TRACTION CONTROL SWITCH

STATES
Active / Not Active

Traction Control Switch describes whether Traction Control is active or not active. The lamp on the dash also displays the selected status. During certain conditions, such as high temperature, the CAB may deactivate the traction control system temporarily.

RF WHEEL SPEED
LF WHEEL SPEED
RR WHEEL SPEED
LR WHEEL SPEED

UNITS	RANGE
MPH	0 – 407

Wheel Speed is an indication of wheel speed as an input to the CAB by the particular wheel speed sensor. The CAB uses the wheel speed to make determinations about the operating conditions of the vehicle and current braking conditions.

C. GLOSSARY AND ABBREVIATIONS

This appendix contains terms and abbreviations found in the Chrysler chassis, powertrain, and body systems manuals.

#1	Fuel Injector Bank #1
#2	Fuel Injector Bank #2
#3	Fuel Injector Bank #3
3ATX	3 Speed Automatic Transaxle
4xRE	4 Speed Electronically Controlled Automatic Transmission
A/C	Air Conditioner, A/C Clutch Relay
A/S	Autostick
AAT	Ambient Air Temperature
ABS	Anti-lock Brake System
ACT	Actuator
ADAPT	Adaptive
ADV	Advance
AIR	Air Switch Solenoid
AIS	Automatic Idle Speed
ALDL	Assembly Line Diagnostic Link
ALL	All Solenoids/Outputs
ALT	Alternator, Alternator Field
APM	Adjustable Pedals Module
APPS	Accelerator Pedal Position Sensor
ASD	Automatic Shutdown
ATC	Automatic Temperature Control
ATCM	Automatic Temperature Control Module
ATM	Actuator Test Mode
AUTO	Automatic Transmission
BAR	Barometric Read Solenoid
BARO	Barometer, Barometric
BATT	Battery
BBL	Barrel
BCM	Body Control Module
BK	Brake
BUX	Built Up Export
CAB	Controller Anti-lock Brake
CALIF	California Emissions Package
CAN	Cancel
CAN	Controller Area Network
CARB	Carburetor
C/C	Cam/Crank
CCD	Chrysler Collision Detection databus
CCP	Canister Purge Solenoid
CDR	Chrysler Diagnostic Readout

CHG	Charge
CHK	Check
CKT	Circuit
CMTC	Compass/Mini-Trip Computer
CNTRL	Control
CONTRL	Control
CTM	Central Timer Module
CURR	Current
CVI	Clutch Volume Index
DBL	Double
DC	Duty Cycle
DDM	Driver Door Module
Des	Desired
DI	Distributor Ignition
DIS	Direct Ignition System
DISCONN	Disconnect
DLC	Data Link Connector
DMP	Dump
DTC	Diagnostic Trouble Code
EATX	Electronic Automatic Transmission
EBD	Electronic Brake Distribution
ECT	Engine Coolant Temperature
ECU	Electronic Control Unit
EEC	Electronic Engine Controller
EFI	Electronic Fuel Injection
EGR	Exhaust Gas Recirculation
EI	Electronic (Distributorless) Ignition
ELEC	Electrical
ELECTRIC	Electrical
EMCC	Electronic Modulated Converter Clutch
EMR	Emission Maintenance Reminder
ENERGZD	Energized
ETC	Electronic Throttle Control
FBC	Feedback Carburetor
FCM	Front Control Module
FDBK	FeedBack
FF	Flexible Fuel
FI	Fuel Injection
FMS	Fuel Monitor Signal
GND	Ground
HD	Heavy Duty
HDC	Heavy Duty Chassis
Hg	Mercury
Hi	High
HP	High Pressure
IAC	Intake Air Control
IAT	Intake Air Temperature
ID	Identifier
IGC	Ignition Coil
IGN	Ignition
IJ	Injector
IN	Inches
INFO	Information
INJ	Injector
IOD	Ignition-Off Draw
IPM	Integrated Power Module
ISO	Isolation
IVS	Idle Valid Signal
KOEO	Key On, Engine Off
KOER	Key On, Engine Running
kPa	Kilo Pascal (Units)
KS	Knock Sensor
LD	Light Duty
LDC	Light Duty Chassis
LDP	Leak Detection Pump
LF	Left Front
LP	Low Pressure or Lamp

LR	Low Reverse, Left Rear
LT	Light/Lamp
MAP	Manifold Absolute Pressure
MFI	Multi-Port Fuel Injection
MIC	Mechanical Instrument Cluster
MIL	Malfunction Indicator Light
MIN	Minimum
MISC	Miscellaneous
Mon	Monitor
MPI	Multiport Fuel Injection
MPU	Microprocessor Unit
MS	Multi-Select
MSC	Mass Storage Cartridge
MSM	Memory Seat Module
MVT	Manifold Tune Valve
MTX	Manual Transmission
N	Number
N/A	Not Available
NGC	Next Generation Controller
N/V	Engine RPM/Vehicle Speed
NVLD	Natural Vacuum Leak Detection
NVRAM	Non-Volatile Random Access Memory
O2	Oxygen
O2S	Oxygen Sensor
OBD II	On Board Diagnostics, Phase II
OD	Overdrive
ORC	Occupant Restraint Controller
OVD	Overdrive
Ovride	Override
P/N	Park/Neutral
P/S	Power Steering
PCM	Powertrain Control Module
PCS	Pressure Control Solenoid
PDM	Passenger Door Module
P-EMCC	Partial Electronic Modulated Converted Clutch
Pos or Posit	Position
PRESS	Pressure
PSI	Pounds of Pressure per Square Inch
PTU	Part Throttle Unlock
P/W	Pulse Width
RAM	Random Access Memory
REF	Reference
RF	Right Front
RKE	Remote Keyless Entry
RL	Relay
RLY	Relay
ROM	Read Only Memory
RPM	Revolutions Per Minute
RR	Right Rear
RWAL	Rear Wheel Anti-lock Brake
S/C	Speed Control
SAE	Society of Automotive Engineers
SBEC	Single Board Engine Controller
SCI	Serial Communication Interface
SENS	Sensor
SHF	Shift Lamp
SHUTDN	Shutdown
SKIM	Sentry Key Immobilizer Module
SMEC	Single Module Electronic Controller
SNSR	Sensor
SOL	Solenoid
SPD	Speed
SPK	Spark
SRV	Short Runner Valve
STEP	Stepper
SV	Special Valve

SW	Switch
SYNC	Synchronous
SYS	System
TAC	Tachometer
TACH	Tachometer
T/B	Throttle Body
T-BODY	Throttle Body
TBI	Throttle Body Fuel Injection
TC	Traction Control
TCC	Torque Converter Clutch
TCM	Transmission Control Module
THROT	Throttle
TEMP	Temperature
TRAN	Transmission
TRANSM	Transmission
TRIG	Trigger
TP	Temperature
TPS	Throttle Position Sensor
TURBO	Turbocharger
UD	Underdrive
VAC	Vacuum
VIC	Vehicle Ignition Controller
VIM	Vehicle Interface Module. An in-line interface that expands tester functionality.
VIN	Vehicle Identification Number
VLV	Valve
VNT	Variable Nozzle Turbocharger
VOS	Vacuum Operated Secondary
VPW	Variable Pulse Width
VTA	Vehicle Theft Alarm
VTSS	Vehicle Theft Security System
WGT	Wastegate
WOT	Wide Open Throttle
WST	Wastegate

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